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Recent Extension of Endemic Typhus Fever in the Southern United States*

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THE report of Maxcy [1] in 1928 on the distribution of endemic typhus fever in the United States emphasized the importance of the disease in the southern states, especially in Georgia, Alabama, and Texas, and certain cities of Florida, South Carolina, North Carolina, Virginia, and Maryland. At that time no cases of the disease had been reported from Mississippi, Louisiana, or Tennessee. The transmission of the disease from rat to man had not been worked out and the existence of the eastern form of Rocky Mountain spotted fever had not been discovered. Since that time, a number of reports have indicated the growing importance of the disease in the states where it was shown by Maxcy to exist and its extension to other states. In addition, the rat as the reservoir host, and the rat flea as the chief vector, have been firmly established. The disease has been differentiated from spotted fever and considerable advance has been made in methods of prevention.

Dougherty,[2] Sellers,[3] and Bowdoin and Boston [4] have reported the extension of the disease in Georgia and have described methods of control. Baker, McAlpine, and Gill [5, 6] have reported its extension in Alabama. Hinman [7] has reviewed the history of both epidemic and endemic typhus fever and the recent occurrence of the endemic disease in Louisiana. Riley [8] has reported its increasing occurrence in Mississippi. Reece [9] and Bohls [10] have reported its increasing importance in Texas. Litterer [11] has reported the discovery of the first cases in Tennessee, and Lumsden and Tucker [12] its increase in incidence in that state. Munson [13] has reported the increase of cases in California. Gordon [14] has also reviewed the incidence of the disease in individual states through 1938.

The purpose of the present paper is to present a picture of the relative importance of the disease in individual southern states at the present time and to show its recent extension to new areas. The writer is indebted to the state health departments and to a number of city health officers for the data which are presented. Endemic typhus in the northeastern coast cities will not be considered because the disease in

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those cities may be of different origin from that in the South and because there seems to be no increase in the number of cases from year to year. California, on the other hand, will be mentioned because there seems to be an increase in incidence similar to that in the southeastern states.

INCIDENCE IN SOUTHERN STATES AND COUNTIES

The number of cases of endemic typhus fever reported in individual southern states from Maryland to Texas and in California from 1922 to 1939 is shown in Table 1. The data given in this table are those furnished by the state health departments, except that in South Carolina they have been supplemented by data from the City Health Department of Charleston, and in Tennessee by Litterer's cases in 1927. In most cases the records do not go back as far as 1922, but they may be considered fairly accurate since 1929. The totals for all the states together after that time show a rapid increase up to 1933, then a sudden drop in 1934 and 1935, a sharp increase in 1936 and 1937, another slight drop in 1938, and an increase in 1939 to the highest number for any one year. The drop in 1934 and 1935 followed extensive rat extermination campaigns in Georgia, Alabama, and Texas, and was thought by the public health authorities of those states to be the result of rat extermination. It is interesting to note, however, that in 1934 there was also a decrease in reported cases in North Carolina, South Carolina, and Florida, so that other factors may have been partly responsible. The peak of incidence in 1939 involves all of the states south of Virginia except Alabama which has shown only a moderate increase in cases since the decrease in 1934.

The record from California undoubtedly includes a number of cases of louse-borne typhus during the years 1922 to 1924. Even at that time, however, some of the cases gave epidemiological evidence of having acquired their infection from close contact with rats. The increase in cases during the past few years undoubtedly represents endemic typhus entirely. Since 1935, all of the cases in California except one have occurred in Los Angeles and San Diego Counties.

In order to demonstrate the relative importance of endemic typhus in indi-

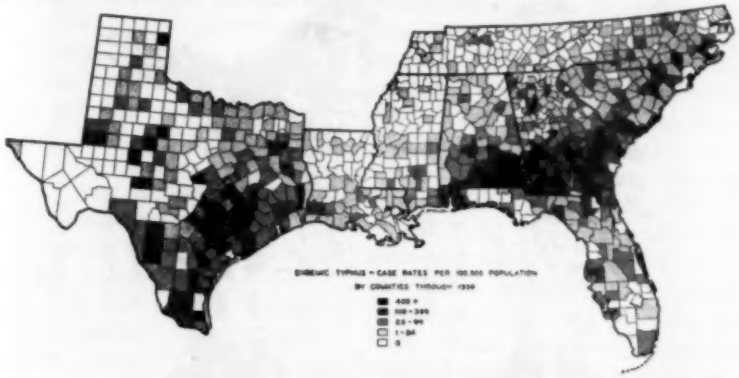
TABLE 1

Cases of Endemic Typhus Reported to State Health Departments of 12 States, 1922–1939

	Year																	
State	*'22*	*'23*	*'24*	*'25*	*'26*	*'27*	*'28*	*'29*	*'30*	*'31*	*'32*	*'33*	*'34*	*'35*	*'36*	*'37*	*'38*	*'39*	*Total*
Maryland	1	4	3	6	12	0	5	7	38	21	23	18	15	15	2	5	12	8	195
Virginia	..	..	..	..	..	8	11	21	47	20	22	14	5	7	6	5	7	8	181
North Carolina	..	..	..	..	..	..	..	3	16	14	24	46	23	51	33	68	81	122	481
South Carolina *	..	..	..	..	..	1	1	3	2	4	26	52	27	43	63	106	147	232	707
Georgia	..	..	..	..	17	32	35	52	153	114	290	624	407	489	816	1,076	1,017	1,103	6,225
Florida	..	..	4	3	16	44	49	48	38	31	41	54	36	27	55	126	80	154	806
Alabama	14	0	2	52	47	66	59	70	66	80	236	819	270	294	373	494	338	471	3,751
Mississippi	..	..	..	..	..	..	..	..	..	..	..	1	0	6	18	30	42	61	158
Louisiana	..	..	..	..	..	..	..	1	0	1	17	11	17	20	12	23	27	115	244
Texas	..	..	..	..	20	16	5	8	15	43	233	392	465	265	327	453	497	538	3,277
Tennessee	..	..	..	..	..	4†	2	2	0	1	2	1	0	8	6	21	24	100	168
California	9	16	17	0	3	0	2	1	1	2	1	4	4	3	9	16	21	30	139
Total	24	20	26	61	115	168	169	216	376	331	915	2,036	1,269	1,228	1,720	2,423	2,293	2,942	16,332

* State Health Department data supplemented by data from Charleston City Health Department
† Cases reported by Litterer [11]

MAP. 1—The relative importance of endemic typhus fever in individual counties of 9 southern states. Case rates per 100,000 population (1930) by counties, based upon the total number of cases reported by each county from 1922 through 1939



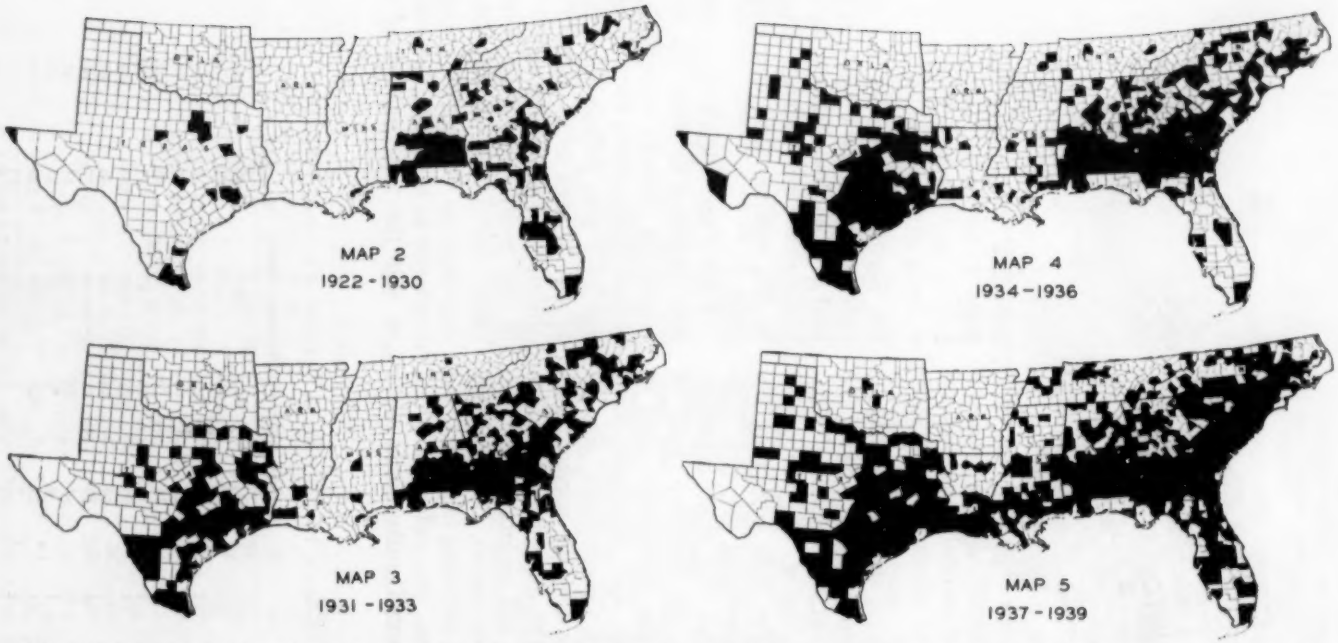
vidual counties of the southern states, Map 1 has been prepared showing the case rate per 100,000 population calculated for the entire 18 year period 1922–1939. The 1930 population has been used in calculating the rates. This map shows that the most important area involves the southern part of Georgia, and the southeastern part of Alabama, with less important areas extending into the southern part of South Carolina and the northern part of Florida. The other important area is in southern and eastern Texas. Between these two centers, Louisiana and Mississippi are becoming important, and Nashville, Tenn., has suffered a severe outbreak. North Carolina seems to be the northern border of the southern endemic area, while Virginia and Maryland have not been included in the map because they are relatively unimportant in the endemic area except for port cities.

Table 2 and Maps 2, 3, 4, and 5 have been prepared to show the increasing number of counties reporting cases of endemic typhus from 1922 through 1930 and by 3 year periods since that time. It will be seen from Table 2 that in general there has been a steady increase in the number of counties reporting cases. Not all of the counties reporting cases in the earlier periods have continued to have cases in recent years, so that the total number of counties

TABLE 2

Endemic Typhus Fever in Counties of 12 States, 1922–1939

State	Number of Counties Reporting Cases					Total Counties in State	Per cent of Counties Reporting Cases
	1922–1930	1931–1933	1934–1936	1937–1939	Through 1939		
Maryland	13	14	12	8	19	23	82.6
Virginia	32	28	11	6	49	99	49.5
North Carolina	9	24	29	50	63	100	63.0
South Carolina	3	17	25	41	42	46	91.3
Georgia	38	94	109	113	134	159	84.3
Florida	15	19	14	38	44	67	65.7
Alabama	26	29	40	49	57	67	85.1
Mississippi	0	1	10	30	31	81	38.3
Louisiana	1	6	9	31	32	64	50.0
Texas	14	78	108	131	157	254	61.8
Tennessee	4	2	5	21	25	95	26.3
California	3	3	3	3	7	58	12.1
Total	158	315	375	521	660	1,113	59.3



MAPS 2, 3, 4, AND 5—Counties in 10 southern states reporting cases of endemic typhus fever in the period 1922–1930, and in the three following 3 year periods

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reporting cases through 1939 is greater than the number reporting cases from 1937 to 1939. Although Virginia and Maryland show a high percentage of counties reporting cases, the number is smaller for the period 1937–1939 than for previous periods. This will be commented upon later. In each of the states from North Carolina to Alabama, and in Texas, over 60 per cent of the counties have reported cases since 1922, and 50 per cent or more reported cases during the last 3 year period.

Maps 2, 3, 4, and 5 show the location of the counties reporting cases. Prior to 1931 (Map 2) Alabama appears to have had the most extensive continuous endemic area, but since that time (Maps 3, 4, and 5) this area has become contiguous with a broad strip of counties extending eastward through Georgia, South Carolina, and North Carolina, and narrower strips extending southward through Florida and westward through Mississippi and Louisiana to join the Texas area. The Texas area itself has extended throughout most of the southern and eastern part of the state and now reaches to the Oklahoma border and into the Panhandle. In Tennessee cases have been reported recently (Map 5) from counties along the eastern and southern borders as well as in the region surrounding Nashville and in West Tennessee. Although it is believed that the cases from some of the rural counties in Tennessee were probably spotted fever, it is interesting that a number of these counties are adjacent to states where typhus is highly endemic.

Prior to 1931, recognition of endemic typhus by physicians was limited, and state health departments had only begun to employ the Weil-Felix reaction routinely on blood sera submitted for the diagnosis of other febrile diseases. Since 1931, however, the increase in reported cases can be due in only a minor degree to the increased recognition of the disease. The opinion of both practitioners and public health authorities is unanimous that the incidence of the disease has increased greatly. The only states in which the number of counties reporting cases has decreased within the past 9 years are Virginia and Maryland. The eastern form of Rocky Mountain spotted fever was first differentiated from endemic typhus in 1930. Most of the early cases were found in Virginia and Maryland, and it was recognized that many cases previously reported as typhus were actually spotted fever. Since that time, the number of reported cases of typhus fever in those states has decreased, while the number of cases of spotted fever has increased. Spotted fever has also become recognized as an important disease in North Carolina and Tennessee, but relatively few cases have been reported from the other southern states in which endemic typhus is important.

OCCURRENCE IN OTHER STATES

Inquiry from the state health departments of states adjacent to those which have been mentioned has elicited the following information. The District of Columbia has had no cases since 1932 and the opinion is expressed that prior to that time some of the cases which were reported as typhus were probably spotted fever. West Virginia reported 1 case in each of the following years: 1931, 1933, 1935, and 1939. The case in 1939 occurred in a mining camp near the Ohio River where there were many rats, and the patient had trapped rats several weeks prior to becoming ill. Kentucky reported 1 case in 1933 and 1 in 1937, but there is some question about the diagnosis in both cases. Missouri reported 5 cases in 1922, 1 in 1935, and 1 in St. Louis in March, 1940. Iowa reported 1 case in Des Moines in 1936.[15] Arkansas reported 2 cases in 1939, but on investigation one of these cases was very doubtful

and the other probably spotted fever. Oklahoma reported 1 case in 1927, 1 in 1937, 1 in 1938, 1 in 1939 and 3 through August, 1940.

OCCURRENCE IN SOUTHERN CITIES AND IN RURAL AREAS

Endemic typhus in the United States has been considered mainly a disease of cities and towns. The disease was first discovered in cities, and the largest numbers of cases have always been reported in cities. In order to record the data for a number of cities as accurately as they could be obtained at the present time, Table 3 has been prepared from several sources. It will be seen that despite the knowledge of the existence of the disease in these cities and despite the control measures which have been instituted in most of them, the total number of cases has gradually increased during the past few years. Eight of these cities reported more cases in 1939 than in any previous year, and a number of others nearly reached their previous maxima. Nashville, Tenn., is particularly noteworthy in that an outbreak of 75 cases occurred in the summer and autumn of 1939, while the largest number previously reported in any one year was 11. Nashville reported more cases in 1939 than any other city in the country except Savannah, Ga., which has reported the largest number of cases each year except in 1938 when it was exceeded by Charleston, S. C.

The most highly endemic areas, however, are those in southern Georgia and southeastern Alabama which are peanut growing areas, and Baker, McAlpine, and Gill [5, 6] stated in 1934: "From the urban centers the disease has spread until much of the incidence is now in purely rural areas and among people who could not have obtained their infection except at home." Furthermore, Dyer [16] found that the woodchuck,

TABLE 3

Endemic Typhus Fever in 17 Cities, 1921–1939

City	Year '21	'22	'23	'24	'25	'26	'27	'28	'29	'30	'31	'32	'33	'34	'35	'36	'37	'38	'39	Total
Charlotte, N. C.		11		*	*	*	*	*	1	3	3	2	2	1	5	2	3	9	10	57
Charleston, S. C.	3	15	0	0	0	0	1	1	3	2	4	10	33	22	21	21	35	74	64	309
Atlanta, Ga.	..	8	9	3	3	6	13	0	0	4	15	16	46	24	59	25	34	27	57	354
Macon, Ga.	..	..	..	..	..	..	1	0	0	1	3	1	9	9	18	18	12	18	16	106
Savannah, Ga.	..	..	37	13	44	40	72	67	52	87	85	110	104	90	69	74	69	72	82	1,167
Jacksonville, Fla	..	..	..	3	2	15	14	9	11	4	6	11	15	8	4	12	23	20	29	186
Miami, Fla.	..	..	..	..	..	..	1	4	8	4	6	4	0	3	4	2	18	10	17	81
Tampa, Fla.	..	..	..	1	0	0	25	28	17	21	12	16	23	11	9	10	6	4	15	198
Birmingham, Ala.	..	1	3	2	1	1	2	1	1	0	0	2	3	3	1	8	8	4	9	51
Mobile, Ala.	..	2	0	2	17	10	17	10	5	2	1	5	25	12	11	11	10	19	44	203
Montgomery, Ala.	..	6	6	8	24	3	4	*	*	*	*	*	27	23	36	26	23	7	22	215
New Orleans, La.	..	..	..	..	..	..	..	..	1	0	0	5	4	4	6	2	1	2	17	42
Dallas, Tex.	..	..	..	..	..	..	..	..	6	3	4	6	4	24	11	1	4	5	22	90
Ft. Worth, Tex.	..	..	..	..	..	..	..	..	..	0	7	2	1	5	9	11	7	10	21	73
Houston, Tex.	0	1	0	1	3	0	1	3	0	2	0	10	5	5	7	5	15	23	46	128
Nashville, Tenn.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	6	3	11	9	75	104
Los Angeles, Calif.	..	9	15	15	0	2	0	0	0	1	1	0	2	2	2	3	6	12	20	90

Data Obtained from State Health Departments Except as Follows:
Charleston, S. C., 1921–1926 from Maxcy,[1] 1927–1939 from City Health Department
Atlanta, Ga., 1921–1927 from Maxcy,[1] 1928–1931 from City Health Department
Macon, Ga., 1927–1931 from City Health Department
Savannah, Ga., 1923–1939 from City Health Department
Birmingham, Ala., 1922–1926 from Maxcy,[1] 1927–1932 from City Health Department
Mobile, Ala., 1922–1927 from Maxcy,[1] 1928–1932 from City Health Department
Montgomery, Ala., 1922–1927 from Maxcy [1]
All Texas cities from City Health Departments
* Charlotte, N. C., 1924–1928, and Montgomery, Ala., 1928–1932, records not available

TABLE 4

Endemic Typhus Case Rates per 100,000 Population in Rural Areas and in Incorporated Towns of Georgia, Alabama, and North Carolina, 1933–1939

State	Rural	Incorporated Towns Having a Population of						State
		1–999	1,000–2,499	2,500–4,999	5,000–9,999	10,000–24,999	25,000+	
Georgia	....	161.6*	.....	603.6	300.7	209.1	183.5	190.2
Alabama	64.5	457.2	459.4	347.2	374.7	108.8	84.3	115.6
North Carolina	5.8	22.2	26.5	58.3	7.9	47.5	19.8	13.4

* This rate includes rural areas and incorporated towns up to 2,499 population.

house mouse, and two species of wild mice could be experimentally infected with typhus, and Brigham and Dyer [17] found that the opossum, three species of field mice, three species of field rats, and the flying squirrel could be infected. They found one "old-field mouse" naturally infected. In Texas, J. and A. A. Chapman [18] described two cases of typhus fever which they believed were contracted from fleas on opossums.

Bowdoin and Boston,[4] however, while admitting that in Georgia there is a considerable incidence in the rural areas, showed that the highest incidence was in cities of 2,500 to 5,000 population. In their analysis, towns having a population of less than 2,500 were included in the rural classification, and they believed that the small towns and villages would account for a large proportion of the cases reported as rural. A number of cases have been cited in the literature in which farmers who contracted the disease were known to have visited feed stores or other establishments in towns where other cases of the disease had occurred. Table 4 shows the case rates per 100,000 population (1930) from 1933 through 1939 for rural areas and for incorporated towns and cities of various sizes in Georgia, Alabama, and North Carolina. As the data from Georgia were not available for towns of less than 2,500 population, these are combined with the rural areas. In the absence of data from the smaller towns, the highest rate in Georgia appears to be in towns of 2,500 to 5,000 population, as stated by Bowdoin and Boston.[4] In Alabama the highest rates are in towns of less than 2,500 population, and the rate is practically the same in towns below 1,000 as in towns of 1,000 to 2,500 population. In North Carolina the rate is highest in towns of 2,500 to 5,000 population.*

An attempt was made to determine whether the rate of increase of endemic typhus during recent years has been more rapid in rural areas or in towns. Data for this analysis were available only from Georgia, Alabama, and North Carolina. In Georgia, where the data for towns with a population of less than 2,500 were combined with those from rural areas, there was evidence of a slightly more rapid increase in the annual rate for rural areas than in that for towns. In Alabama no definite difference in the two rates could be seen, but the data were available only as far back as 1933 when the number of reported cases in that state had already reached its peak. In North Carolina there was a slightly more rapid increase in the rate for towns than in that for rural areas. No definite conclusion can be drawn from this analysis. It may be, however, that in Georgia and Alabama, where the endemicity of the disease is high, the large reservoir of infection in cities serves as a greater source of spread

* Rates for incorporated towns of less than 1,000 population in different states may not be strictly comparable, because of differences in the tendency of small towns to become incorporated. For instance, in Alabama there were in 1930 only 53 incorporated towns in this group whereas in North Carolina there were 343.

to rural areas than in North Carolina where the endemicity is still low. It may be that in North Carolina the progress of the disease is in an earlier stage than in the other two states, or it may be that the more northern location of North Carolina furnishes less favorable opportunities for the extension of the rat and flea reservoirs of infection into rural areas.

DISCUSSION

The origin of endemic typhus fever in the United States is still a matter of speculation. In the port cities of the northeastern states the assumption seems to be that it was imported from northern Europe. Zinsser's [19] interesting conclusion that cases of Brill's disease were exacerbations of previous infections acquired in Russia cannot be entirely discarded on the basis of the evidence which he presented, but aside from the occurrence of the disease almost exclusively in persons who had emigrated from Russia, the epidemiology of the disease is essentially similar to that in southern port cities, and the rat and rat flea must still hold first attention in our conception of its transmission. The introduction of the disease into port cities along the southern Atlantic and Gulf coasts may also have been from Europe, but conceivably may have been from Latin America, although Mexico is the only Latin American country where the disease is known to have existed to any great extent in endemic form. Texas may have been invaded partly from Gulf ports, a view supported by the fact that the disease has been most prevalent in the southeastern portion of the state. A considerable part of the invasion, however, probably came across the Mexican border.

There is some evidence that Brill's disease in the northeastern port cities and the endemic typhus of the southern states are infections caused by different strains of rickettsiae,[20] but that question is beyond the scope of this paper.

Undoubtedly the extension of endemic typhus in the southern United States is due primarily to the migrations of the brown rat, *Rattus norvegicus*, and of the tropical rat flea, *Xenopsylla cheopis*. An increase in the rat population has been noted in many places coincident with the appearance or increase of typhus fever. Maxcy [1] called attention to the railroads and highways as probable routes by which the reservoir of the disease migrated from the coast to the interior. In the study of the Nashville outbreak in 1939 it was found that the main focus of the disease was in granaries and other establishments close to the railroads entering the city from the south and southeast. With the recent improvement in roads and the increase of transportation by trucks, better facilities have been provided for the transportation of rats and fleas to distant points. The direct migration of rats from town to town, along highways and through the fields, is a slower process, but undoubtedly occurs and furnishes an opportunity for susceptible wild rodents to become reservoirs of the disease. This direct migration of rats is probably the explanation of the high endemicity in the peanut growing areas of Georgia and Alabama.

The facts that endemic typhus has not yet been controlled in many of the large cities of the southern states, and that it has appeared recently in new cities far from its earlier habitat, indicate its increasing importance as a public health problem. Some cities in which it has not yet appeared have already started campaigns for rat control, and it would be wise for all state and city health authorities to undertake such a program. Although the southern states offer a more favorable climate for the breeding and spread of rats and fleas, the fact that endemic typhus has

maintained itself in northern cities for many years indicates that it can spread much farther north than it has done up to the present time.

The rat has already too long been an economic burden as well as a health menace in this country. Now that simplified methods have been developed by the rat control forces of the State Health Department of Georgia and the U. S. Public Health Service for preventing the entrance of rats into buildings, such programs can be instituted at relatively small expense, with definite expectation of success and with the hearty coöperation of business establishments and home owners. The U. S. Public Health Service and the state health departments of the western states are trying desperately to prevent the spread of plague into the Mississippi Valley. It would indeed be a misfortune if plague and typhus should meet in the cities of this region.

SUMMARY AND CONCLUSIONS

1. The incidence of endemic typhus has increased rapidly in the Atlantic and Gulf states from North Carolina to Texas, and in Tennessee, during the last decade. There has been a similar but smaller increase in southern California. In all of these states except Alabama more cases were reported in 1939 than in any previous year.

2. This increase has consisted of a higher incidence in most of the large cities where the disease was first discovered, and also an extension to other cities and towns and to rural areas. Nearly 60 per cent of the counties in these states have reported cases since 1922. The highest case rates appear to be in small towns.

3. The most highly endemic areas are in southern Georgia, southeastern Alabama, and southeastern Texas. Louisiana, Mississippi, and Tennessee are the latest states to show an important increase in cases. Nashville, Tenn., reported more cases in 1939 than any city except Savannah, Ga.

4. A few authentic cases have been reported in recent years from West Virginia, Missouri, Oklahoma, and Iowa. Virginia and Maryland have reported very few cases of typhus since the discovery of Rocky Mountain spotted fever in those states.

5. In order to control endemic typhus where it is now present it will be necessary to institute more vigorous rat eradication programs than have been carried on in the past; and in order to prevent its further spread to new areas it is advisable for state and city health departments in unaffected localities to begin similar programs.

REFERENCES

1. Maxcy, K. F. The Distribution of Endemic Typhus (Brill's Disease) in the United States. *Pub. Health Rep.*, 43:3084 (Nov. 23), 1928.

2. Dougherty, M. S. Endemic Typhus Fever in Georgia. *J.M.A. Georgia*, 24:1 (Jan.), 1935.

3. Sellers, T. F. Recent Developments in the Knowledge of Endemic Typhus Fever. *J.M.A. Georgia*, 24:7 (Jan.), 1935.

4. Bowdoin, C. D., and Boston, R. J. A Preliminary Report on the Practical Epidemiology and Control of Endemic Typhus Fever in Georgia. *Am. J. Trop. Med.*, 20:537 (July), 1940.

5. Baker, J. N., McAlpine, J. G., and Gill, D. G. Endemic Typhus. *A.J.P.H.*, 24:1068 (Oct.), 1934.

6. Baker, J. N., McAlpine, J. G., and Gill, D. G. Endemic Typhus in Alabama. *Pub. Health Rep.*, 50:12 (Jan. 4), 1935.

7. Hinman, E. H. History of Typhus Fever in Louisiana. *A.J.P.H.*, 26:1117 (Nov.), 1936.

8. Riley, G. E. Typhus and Rocky Mountain Spotted Fever in Mississippi. Unpublished paper read before the Mississippi Public Health Association, Dec., 1939.

9. Reece, C. D. Typhus Fever in Texas. *Texas State J. Med.*, 30:192 (July), 1934.

10. Bohls, S. W. Typhus Fever in Texas. *South. M. J.*, 28:1162 (Dec.), 1935.

11. Litterer, W. A Discussion of Three Fevers Which Simulate Typhoid. *J. Tennessee M. A.*, 21:52 (June), 1928.

12. Lumsden, L. L., and Tucker, C. B. Clinical and Epidemiological Features and Differential Diagnosis of Rocky Mountain Spotted Fever and Endemic (Murine) Typhus Fever. *J. Tennessee M. A.*, 32:339 (Oct.), 1939.

13. Munson, E. L. Rocky Mountain Spotted Fever and Endemic Typhus Fever. *California & West. Med.*, 41:365 (Dec.), 1934.

14. Gordon, J. E. The Clinical Features of Rickettsial Diseases. *Virus and Rickettsial Diseases: Symposium, Harvard School of Public Health, 1939.* Harvard Univ. Press, 1940, p. 828.

15. Freed, H., Jordan, C. F., and Eckhoff, D. Endemic Typhus Fever in Iowa. *J. Iowa State M. Soc.*, 27:425 (Aug.), 1937.

16. Dyer, R. E. Endemic Typhus Fever: Susceptibility of Woodchucks, House Mice, Meadow Mice, and White-footed Mice. *Pub. Health Rep.*, 49:723 (June 22), 1934.

17. Brigham, G. D., and Dyer, R. E. Endemic Typhus Fever in Native Rodents. *J.A.M.A.*, 110:180 (Jan. 15), 1938.

18. Chapman, J., and Chapman, A. A. Typhus-like Fever Contracted from Opossum Fleas: A Preliminary Report. *Texas State J. Med.*, 31:36 (May), 1935.

19. Zinsser, H. Varieties of Typhus Virus and Epidemiology of American Form of European Typhus Fever (Brill's Disease). *Am. J. Hyg.*, 20:513 (Nov.), 1934.

20. Zinsser, H. Epidemiology and Immunity in the Rickettsial Diseases. *Virus and Rickettsial Diseases: Symposium, Harvard School of Public Health, 1939.* Harvard Univ. Press, 1940, p. 872.

Cotton Rats and White Mice in Poliomyelitis Research*

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FROM the standpoint of availability, cost, expense of maintenance, ease and safety of handling, and resistance to naturally acquired infections, the cotton rat compares favorably with the white rat as a laboratory animal, with the exception that it is somewhat more timid and, in our experience, propagates almost not at all during the colder season of the year. The suitability of the white mouse as a laboratory animal, in so far as these general considerations are concerned, is too well known to require discussion.

In addition to these general considerations, the suitability of cotton rats and of white mice in poliomyelitis research depends upon certain specific qualities, such as the degree and uniformity of susceptibility, the incubation period, and the definiteness of the symptoms of the experimentally induced disease. It is these latter considerations which we desire to discuss.

Susceptibility to new strains—The susceptibility of the cotton rat to primary inoculation with poliomyelitis virus is apparently low; for instance, we were able to produce paralysis with the monkey adapted Lansing strain of virus in 1937 in one of 2 cotton rats after an incubation period of 29 days. During 1938 one of 11 cotton rats inoculated with the same strain of virus developed paralysis, again on the 29th day. Attempts at further transfer failed in both instances; however, the attempts were somewhat hampered by a shortage of cotton rats. Further attempts at primary transfer in 1939 resulted in one of 4 cotton rats developing symptoms in 15 days. From this rat the virus has to date been successfully carried through 55 successive transfers.

During 1939 a strain of poliomyelitis from Niagara Falls, N. Y., was established in monkeys from which it was inoculated into 4 cotton rats, one of which developed paralysis of the left front leg on the 41st day, but attempts at second transfer failed.

Inoculation of cotton rats with 2 Detroit strains was, in one instance, followed by symptoms in one of several rats in each of 3 successive transfers, but attempts at further passage failed. Attempts with some 6 additional strains have to date given negative results.

Other investigators have attempted to convey strains of poliomyelitis to cotton rats, but without success, so far as we are aware, with the exception of Jungeblut and Sanders who succeeded in transferring a virus to cotton rats from a fecal strain of poliomyelitis. This cotton rat strain has definite peculiari-

* Read at a Joint Session of the Laboratory and Epidemiology Sections of the American Public Health Association at the Sixty-ninth Annual Meeting in Detroit, Mich., October 8, 1940.

ties, but the authors claim that it is immunologically a strain of poliomyelitis. The cotton rat, therefore, appears to be quite insusceptible to unadapted strains of poliomyelitis and is, therefore, not as satisfactory an animal for primary isolation of the virus as is the monkey. The same is even more apparent for white mice, since we have consistently failed to produce symptoms in this species, except with the Lansing strain of virus following its adaptation to the cotton rat.

Susceptibility to adapted strain—White mice and cotton rats appear to be rather uniformly susceptible to the adapted Lansing strain of poliomyelitis. The incubation period in cotton rats is usually between 3 and 8 days, while in mice * symptoms usually become apparent in from 2 to 10 days following inoculation, but the interval has been observed to vary from 24 hours to 93 days.

In both cotton rats and white mice the symptoms are very distinct, paralysis of one or more legs being the symptom usually first observed, while paralysis of the neck or back is not uncommon, and paralysis of the tongue has been twice noted. Death occasioned by respiratory failure usually occurs within from 12 to 48 hours of the first recognized symptoms. Occasionally an animal recovers after having developed symptoms; in such recovered individuals muscle atrophy and deformities may develop.

Symptoms can be almost uniformly produced in mice when 0.03 cc. of a suspension of mouse tissue, prepared by pooling the basal portions of the brain and the cords from several infected mice, is intracerebrally inoculated in dilutions of from 1:10 to 1:500, while some of the inoculated mice will succumb to dilutions of virus ranging as high as 1:10,000.

Route of inoculation—In our hands the only successful route of inoculation in rodents consists in the direct implantation of the virus within the central nervous system. Intranasal, intraocular, and subcutaneous inoculations, as well as feeding of the virus, have uniformly failed to induce infection. Unless these negative results can be reversed, it would appear that these rodents will contribute but little toward elucidation of the natural route of infection and transit of the virus in man.

Immunity—A few mice and cotton rats, recovered from paralytic attacks induced by the Lansing strain of virus, have been reinoculated intracerebrally with the homologous strain and were apparently solidly immune. Following subcutaneous inoculation with emulsions of infected mouse brains, mice develop potent neutralizing antibodies in their sera (see Table 1).

Protective qualities of humoral antibodies—Humoral antibodies have shown but little protective value against experimentally induced poliomyelitis of monkeys. However, it is difficult to titer the dosage of virus in this species, and it is conceivable that in mice protection might be made more apparent by reducing the dose of virus to near the minimal infecting dose.

Several such trials have been carried out on groups of mice, and have shown a tendency for a few more immunized mice to survive than was the case in the non-immunized control group (Table 2). These results are, however, possibly related to the artificial method of inoculation, since the needle probably in some instances produces a degree of bleeding at the inoculation site, where the plasma, if immune, by coming into direct contact with the virus would tend to neutralize it and thus tend to prevent infection.

* Gray mice trapped in nature appear to be equally as susceptible as white mice.

TABLE 1

The Development of Virus Neutralizing Antibodies in the Blood of Mice Following Subcutaneous Inoculation with the Lansing Strain of Virus

Experiment 1,109 Serum Collected July 11, 1940, from Mice	*Dilution of Virus*	*No. of Mice Inoculated*	*Deaths by Days Following Serum-Virus Inoculation*														Mice Survived	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14 to 21		
Immunized by subcutaneous inoculation on	1/10	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	
June 27, 1940	1/20	4	..	..	..	..	..	..	..	..	..	..	..	..	*3	..	1	Immune
July 5, 1940	1/40	4	..	..	..	..	..	1	..	..	..	..	..	..	..	..	3	
Non-immunized	1/10	4	1	..	..	..	2	..	1	..	..	..	..	..	..	..	0	
mice	1/20	4	1	1	..	..	1	..	..	..	1	..	..	..	..	..	0	Not
Controls	1/40	4	..	1	..	..	2	..	..	..	..	..	..	1	..	..	0	Immune

* Mice killed by cage mate: No paralysis observed
Inoculation Dosage: 0.03 cc. of mixture of 1 part various dilutions of virus + 1.5 parts undiluted serum

Humoral immunity in the population—Cotton rats and white mice are both suitable species for determining the virus neutralizing properties of human sera, but mice, obviously the more ideal of the two species, have been adopted for this purpose in our studies. To date, 293 human sera have been tested, largely by Dr. V. H. Haas, for the presence of antibodies capable of neutralizing the Lansing strain of poliomyelitis virus. The results are usually definite and easily read, and are readily repeatable, and the test requires but 0.45 cc. of serum.

This group of 293 tested human sera is larger than any series thus far reported by a single laboratory employing monkeys; however, we consider that the study has but just begun. No detailed

TABLE 2

Influence of Subcutaneous Inoculation upon Later Intracerebral Inoculation

1940 Experiment 1,109 Immune Status of Mice	*Virus Subcutaneously 7-12-40*		*Virus Dilution Intracerebrally 0.03 cc.*	*No. Mice Intracerebrally Inoculated*	*Deaths by Days Following Inoculation*																			*No. Mice Surviving*	*Per cent of Mice Dying*
Immune status of mice	6/27	7/3			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21		
Immunized	+	+	1/500	30	*3	..	..	10	2	..	1	..	2	..	..	..	..	..	1	3	..	3	..	..	..	5	81.5
Controls	—	—	1/500	35	*2	2	..	13	1	..	..	1	2	..	3	1	4	2	1	..	..	..	..	..	..	3	90.9
Immunized	+	+	1/2500	30	..	1	1	3	..	2	..	..	..	..	1	2	1	..	..	..	..	..	..	..	..	1	18 40.0
Controls	—	—	1/2500	33	*1	..	..	8	1	..	..	1	..	..	3	..	2	..	..	1	..	2	1	..	..	13	59.4

* Indicates deaths: Excluded as due to Trauma
Immunized and Control Mice bled July 11, 1940

analysis of our results will therefore be attempted at this time. It may be pointed out, however, that in general the results secured to date are in agreement with the results secured in monkeys. For instance, 65 per cent of the sera were found to be definitely immune, 6.5 per cent partially immune, and 28.5 per cent, non-immune. It was found that the percentage of sera showing protection increased with the age of the donors and that children in institutions tended to a relatively higher percentage of immunity than was the case with the same age group living in urban dwellings. The test is so readily performed that it will now be possible to study humoral immunity adequately in groups and geographical units of the population and, by repeated tests, to follow immunity development in individuals, and in this way to elucidate, it is hoped, the epidemiology of the disease.

Chemotherapeutic studies — Cotton rats and white mice, together with the Lansing strain of virus, are now being utilized in the search for curative agents in poliomyelitis, and these animals will permit studies to an extent practically impossible with the monkey.

Is the Lansing virus peculiar?—The failure to establish more well known strains of poliomyelitis in the cotton rat naturally raises the question as to the identity of the Lansing strain with other strains of poliomyelitis virus. The case from which this virus originated

TABLE 3

Serum-Virus Protection Test with White Mice
Protocol

* Serum	Virus Dilution Inoculation—4 Mice	Deaths by Days Following Serum-Virus Inoculation																			Survived	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21		
P-331	1/10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	
	1/20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	Immune
	1/40	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	
P-132	1/10	..	..	..	..	..	1	1	..	..	1	..	..	1	..	..	..	..	..	..	..	..	0	
	1/20	..	..	..	..	..	..	2	..	..	..	..	..	2	..	..	..	..	..	..	..	..	0	Not
	1/40	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	2	Immune
P-133	1/10	..	..	1	..	..	..	..	..	1	..	..	..	2	..	..	..	..	..	..	..	..	0	
Neg.	1/20	..	1	..	..	..	..	1	..	..	..	1	..	..	..	..	1	..	..	..	..	..	0	Not
Control	1/40	..	..	..	..	..	..	1	..	1	..	..	1	..	..	..	..	..	..	1	..	..	0	Immune
P-134	1/10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	
	1/20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	3	Immune
	1/40	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	
P-135	1/10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	
	1/20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	Immune
	1/40	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	
P-136	1/10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	
Lennett	1/20	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	Immune
+ Control	1/40	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	
P-137	1/10	..	..	..	..	..	..	2	1	1	..	..	..	..	..	..	..	..	..	..	..	..	0	Not
	1/20	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	1	Immune
	1/40	..	..	..	..	..	..	..	..	..	1	1	..	..	1	..	..	1	..	..	..	..		

* 0.1 cc. undiluted + 0.15 cc. various dilutions of virus held for 1 hour room temperature
0.03 cc. of mixture inoculated intracerebrally

was clinically considered to be one of poliomyelitis, and the clinical and pathological picture in monkeys confirms this opinion. Immunologically the virus is found to be fully neutralizable with a monkey pooled poliomyelitis antiserum secured from Dr. E. H. Lennette, with antisera produced in monkeys and mice against the P.M.V. strain of virus, and against a strain recovered from Niagara Falls in 1938, and by serum from immune monkeys Nos. 91 and 53 secured through the courtesy of Dr. S. D. Kramer, while monkey No. 41 received also from Dr. Kramer was negative.

On the other hand, an antipoliomyelitis serum secured from Dr. Lloyd Aycock and one produced against a virus recovered in 1939 from Charleston, S. C., both failed to protect against the Lansing strain.

The positive immunological results secured with the sera from animals experimentally inoculated with certain strains of poliomyelitis virus, together with the high incidence (71.5 per cent) of serum immunity found among 293 human sera, indicates that the Lansing strain of virus is immunologically a commonly occurring one whose adaptation to an inexpensive rodent host, it is hoped, may materially facilitate research in certain phases of the poliomyelitis problem.

REFERENCE

1. Jungeblut, C. W., and Sanders, M. *Proc. Soc. Exper. Biol. & Med.*, 44, 2:375–378 (June), 1940.

The Local Health Officer and Military Emergencies*

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AN emergency is a reality appearing suddenly and calling for immediate action. By its very nature it is unpredictable in time or character, and conforms to no laws or rules of occurrence. Particularly is this true of those we qualify as military emergencies.

We may perhaps be charged with futility of words if we attempt to read into the experience of past wars lessons presumed to be helpful for national defense today. And yet, such is the inclination of the human mind that it chooses to apply its imagination to unforeseen but possible oncoming events.

Military emergencies occur in each of the four phases of the cycle from peace to war and back again to peace:

Mobilization and recruitment.
Training and assembly of troops for areas of combat or action.
Combat or other active duty of armed forces.
Demobilization of armies to civilian status.

The local health officer can hardly escape involvement to some degree in each of these unless his area of jurisdiction is unusually remote and sparsely populated.

Military emergencies affecting official health organizations will fall in the main under two major categories: those of a sanitary nature, and those disrupting administrative routine.

The first probable emergency will be created by assembling within a health jurisdiction area, and usually at sites and in buildings inadequate for the purpose, of large numbers of young men from a wide variety of homes and communities, brought together under conditions of considerable overcrowding, fatigue, irregularity of food and cleanliness services. This process of mobilization of young men for training is likely to include unusual opportunities for exposure to bacterial and virus diseases of the upper respiratory tract, and is apt to be accompanied or preceded by increased occasion for venereal infection.

Specifically, such emergencies will express themselves as sudden increases in cases of mumps, measles, whooping cough, meningitis, the common cold, and, more rarely, of influenza and bacillary dysentery, first among recruits and then in the contiguous civilian population.

A second emergency will appear with the insidious or obvious infiltration of prostitutes, who will create a sanitary nuisance in zones surrounding military areas readily accessible to officers and men off duty. They will immediately cause social confusion with temptation and immorality in the civilian population and among the transient camp hangers-on.

* Read at a Special Session on Communicable Disease Control under Wartime Conditions of the American Public Health Association at the Sixty-ninth Annual Meeting in Detroit, Mich., October 11, 1940.

Another will be the sudden and uncontrolled establishment of a multitude of eating, drinking, and amusement places accessible to troops and their visiting friends.

A fourth, and this an administrative type of emergency, will be the disruption of existing politically defined areas of health jurisdiction, by military orders that create zones, corps and army areas inclusive of several or many civil health jurisdictions, and in this process duplicate or supersede the authority of the local health officer by setting up a military sanitary jurisdiction consistent with the need of troops in training, with in-bounds and out-of-bounds defined and enforced for troops and civilians alike by the military police.

A fifth situation likely to develop, again administrative rather than sanitary in character, is the stripping from the health department of the ablest men and women of the staff by the military demand for trained personnel familiar with the terrain or locale, and called upon to serve army needs, and to replace health personnel in larger and more important communities, already disorganized by enlistment or draft.

What the local health officer will do in the face of these emergencies must depend about equally upon the competence and understanding of the commanding officer of the military forces, the experience of his sanitary officer or surgeon of the command, and the promptness with which the latter and the local health officer collaborate to use their respective authorities and personnel in a plan of action acceptable and effective alike for the protection of both troop and civil population groups against communicable diseases.

We may assume that in any emergency involving military units, or related even remotely to their effectiveness, the military will at once if necessary supersede the civil health authority, exercising jurisdiction not only over military but civilian populations within the area concerned. This is really the greatest administrative emergency likely to face the local health officer and the population and area he has been responsible for. Under these conditions it is essential that official liaison and continuity of essential reports and records, particularly of the notifiable diseases, and of deaths, be immediately established by personal contact between the local health officer and the medical officer of troops, and an agreement reached at once on the most productive use of the trained personnel available to both.

The records of water sources, of facilities and capacities for waste disposal, and of the licensed producers and vendors of foods, particularly of milk, will be needed by the military authority. The local health officer must learn from the medical officer of the command the amount and causes of noneffectiveness for medical reasons among the troops.

Whether or not a sanitary emergency becomes a serious hazard to health will depend chiefly upon the prior and current competence of local health service in two respects: first, the accurate, complete, and up-to-date record of all potable and non-potable and potentially usable safe water sources in the area, a record of all premises and persons permitted or licensed to produce or sell milk, and of all public eating places, and of the method and place of disposal of household, industrial, and community waste. The second test of a health officer's competence and readiness to meet likely military health emergencies will be his knowledge of the incidence of notifiable diseases in his area, of insect and other vermin nuisances, and of housing and industrial conditions which may become foci for the spread of disease.

Without these records of sanitation and disease incidence in readily available tabular and areal map form, the

local health officer will be powerless to give the assistance which the medical officer of troops will need and have a right to expect as soon as or before troops enter a previously unoccupied civil health jurisdiction.

Under ideal conditions, and in the absence of actual combat action demanding complete secrecy as to troop movements, the civil health officer should be notified in advance of the time and probable number and expected duration of stay of troops moving into his area. From the moment any body of troops enters a health area, the respective military and civil health officers must act in the closest collaboration, exchanging all pertinent information and records of sickness of a significant character.

MOBILIZATION AND TRAINING PERIODS

The training period, together with the sanitary problems of transportation of troops prior to combat or other active duty, presents less acute and less numerous emergencies than does the mobilization period. Hospitalization of acute respiratory disease in epidemic form is likely to be the major emergency. To supply sufficient hospital beds may mean a sacrifice of facilities ordinarily devoted to isolation of acute and chronic communicable diseases, especially tuberculosis, with corresponding disturbance of an already inadequate provision for hospital isolation of this disease. The local health officer will become the coördinator if not actually the administrator of the hospitals of his community.

UNITS IN ACTION

It would be fruitless if we were to attempt to list or describe emergencies connected with military combat, and services of supplies supporting units in action. There is no limit to their variety or severity, as reading of the daily papers for the past twelve months must have convinced even the least imaginative person in the United States.

The chief safeguard and factor of administrative preparedness will always be the complete sanitary coverage of the entire area involved in troop occupation, regardless of the movement in or out of troops, and inclusive of all industrial, production, or service plants or facilities for transport. The unit of permanent sanitary control in war is not population but area. Perhaps one should say that since troops constitute a self-sufficient sanitary unit, the area health control will supplement that of troops and be effective, whatever the character or amount of the population shift that may occur, at one time the area being almost vacant, at another crowded unavoidably and beyond the limits of sanitary safety.

The most urgent emergency facing any military medical authority during combat or other active period of troops is a sudden extensive increase in their noneffective rate because of sickness. To make and keep the noneffective rate of troops at the minimum must be the first consideration of both military and civil health authority, and almost any sacrifice of other objectives may be justified to this end.

DEMOBILIZATION

The phase of demobilization should present only rare and minor emergencies involving the local health officer, since under any orderly release of men from military service the medical certification of their condition should be complete and give entire assurance of freedom from communicable disease. The widespread and relatively gradual redistribution of demobilized men to their homes differs little from the movement of the general civil population, and men who have had the medical protection and instruction of military service may be considered as assets and not lia-

bilities for any civil population to which they return.

ENVIRONMENT

From the experience of military medical officers it appears that it is the neglect of record and remedy of the most elementary factors of environment by local health officers that leads to or permits emergencies involving troops.

Now is the time to prevent emergencies jointly involving civil and military medical jurisdictions. Fundamental sanitary knowledge demands detection and abatement of sanitary nuisances as this term is technically and precisely used. I do not mean esthetic offenses to sight, hearing, or smell that often masquerade as health hazards and divert attention from the real dangers in water, milk, foods, sewage, housing, and industrial conditions.

Two features of military movements today must be constantly kept in mind by the local health officer. One is the rapidity of transport and the resulting great distances covered in a day's march of motorized land and aerial transportation, and the other is the mushroom growth of living, working, and recreational premises in the immediate vicinity of training camps.

Only by the closest and most coöperative liaison between the local health officer and the medical officer of troops can emergencies due to these factors be avoided or met. This coöperation must be not merely that of officialdom, and the formalities of the entrenched and congenital bureaucrat, but must reveal professional initiative and personal enthusiasm and imagination. It must go far beyond the immediate and obvious, and include all the potentialities of health promotion to keep the armed forces at their maximum of effectiveness without loss of protection to the civilians of the area.

Whole states and a multitude of local health jurisdictions will be crossed in twenty-four hours by very large bodies of troops, and as they pass through, each local health officer must be on guard and available if not actually in personal touch with the medical officer of the military unit for any action or local information that may be needed. For much of this, the state health department will provide the liaison.

The following quotation from an army medical inspector of present authority and with a wide experience gives a glimpse into the relationship desired and expected between military and civil officers in charge of sanitation:

> My own experience in the training and manoeuver areas during the past year as Army Medical Inspector has been that the local health officer plays a very important rôle in protecting the health of the troops. Actually he inspected or supervised the inspection of public eating places, road-houses, "honky-tonks," and other places of similar nature frequented by troops off duty; he submitted reports as to the potability of various water supplies throughout the area; he saw that I was constantly advised relative to health conditions in the training area and throughout the state.

The Army, as well as civil sanitary codes, requires the immediate notification of communicable diseases, and the local health officer will be well advised if he makes contact with the pathologist of any army hospital or medical formation in his area, for through his hands pass much of the earliest and most exact information as to causes of diseases and deaths. The medical officer of troops must keep civilian health officers in his vicinity informed as to the usual notifiable diseases in his unit, and of any sanitary or epidemiological facts of significance.

To point my general remarks, let me relate briefly some of the emergencies which I had an opportunity to observe at firsthand:

EMERGENCIES DURING THE WORLD WAR

1. Within forty-eight hours of the outbreak of the World War in 1914 the Health Depart-

ment of New York City was called upon by foreign nations for all its reserve supply of immunizing and therapeutic sera.

2. Thirty-five hundred horses died of an epizoötic in a low clay bottom land in a British sector. Their burial created an emergency. The methane gas from their buried decomposing bodies was used as fuel for almost eighteen months.

3. An outbreak of scarlet fever of unusual type was reported in midsummer from our troops in the Vosges. The symptoms were well explained when it was learned that all the patients had eaten generously of the berries of the wild belladonna plant, mistaking them for our common blueberry.

4. Hundreds of cases of a very severe 3 day fever were reported from Blois, which required the rare clinical and laboratory judgment of Col. Hans Zinsser to distinguish from meningitis and influenza.

5. Widespread sporadic cases of typhoid in a motor transport corps was explained by the discovery that at their central camp near Marseilles they had violated orders by drinking from a pellucid clear but non-potable local brookwater. The camp hospital had reported the cases as intestinal flu. The diagnosis of typhoid was revealed by the pathologist at Dijon, who reviewed the autopsy protocols from the camp hospital.

6. During the Chateau Thierry offensive 150,000 cases of bacillary dysentery developed among our troops. A handful only reached hospitals, for recovery in 3 days was usual. The origin of the infection was the hillside smeared with German feces over which our troops pushed the enemy in retreat.

COMMON COMMUNICABLE DISEASES

To keep your sense of proportion and of the permanence of our belligerency against the common communicable diseases even in war let me quote a few notes from the first and last of the 60 weekly bulletins of the Chief Surgeon's office of the A.E.F.

April 17, 1918. No. 1

"Between April 1st and 14th there have been reported from the A.E.F. the following number of cases of various communicable diseases:

Chicken pox	5	Meningitis	27
Diphtheria	110	Scarlet fever ...	114
Dysentery	2	Smallpox	2
Measles	43	Typhoid	4
		Anthrax	3

"The incidence rates for diphtheria, scarlet fever, and meningitis are higher per 100,000 troops in the A.E.F. than at any time since January 1, 1915, in the B.E.F. There have been epidemics of diphtheria and scarlet fever among a number of organizations in the 32nd division.

. . . .

"The cases of meningitis have been distributed without any evidence of epidemic foci. The occurrence of a number of cases of chicken pox among colored troops would suggest that mild smallpox is being overlooked and is being reported as chicken pox, a relatively rare disease in adults.

. . . .

"One death occurred from small pox in an officer exposed to the disease while convalescing from mumps in a hospital. He had not been protected by recent vaccination.

. . . .

"Two deaths from anthrax have occurred; in one of them the diagnosis up to the day of death was 'cellulitis of the neck following vaccination on the arm.' The other was diagnosed and treated as meningitis, and not until the time of autopsy was the diagnosis of anthrax septicemia established."

June 2, 1919. No. 60. Final number

"There have been reported in the A.E.F. including troop units in Italy and Russia, 1,418 cases of typhoid (1,248) and paratyphoid (170) fevers with 155 and 3 deaths respectively, between August, 1917, and May, 1919, inclusive.

Weekly Review

"There has been an increase during the past week of 7 cases of diphtheria, 2 cases of measles, 9 cases of meningitis, and 4 cases of typhoid fever. Of 9 cases of typhoid reported only 4 were proved cases. The venereal disease rate has risen considerably due to especially high incidence discovered in detached negro labor troops, recently assembled and thoroughly examined before embarkation.

"The annual venereal disease rate for the week ending May 21, 1919, per 1,000 troops for the A.E.F. was 56.08. The total noneffective rate was 2.69 per cent; from venereal diseases included 0.49 per cent.

. . . .

"The following cases of certain communicable diseases were reported during the week ending June 1, 1919:

Chicken pox ...	7	Meningitis	12
Diphtheria	30	Paratyphoid ...	1
Dysentery	2	Scarlet fever ...	6
Measles	13	Typhoid	9
		Smallpox	2

Sometimes emergencies occur as a long series of consecutive events, such as the 6 weeks of emergencies created by the development of typhoid fever among 68 members of a replacement draft of 250 men as they travelled from Camp Cody, Texas, through Camp Merritt, New Jersey, overseas by transport at Liverpool on disembarking, at Southampton in a rest camp, at Cherbourg, France, in transit and finally at the replacement, assembly and training camp at St. Aignan where all but 2 of the 11 deaths occurred. A barrel of water polluted at source or by an unknown carrier, a common cup on a string nailed to the barrel in a box car from Texas to New Jersey; no officers travelling with the replacement draft; eagerness of troops to get overseas in spite of early symptoms which were minimized; and undue confidence in unlimited protection by typhoid vaccine were among the factors of causation. All of the affected draft had been vaccinated, and no troops travelling with the infected men developed the disease.

CONCLUSION

In conclusion, let me say that for the prevention of military emergencies in the future, the local and state health officers must now make sure that they have complete record of all facts of sanitary importance in their areas, and keep these records up to date at all times; and that they insist upon complete reporting of notifiable diseases and use this information for effective control, and provide for liaison with the medical officer of any military unit entering their area, from whom they must expect equally complete information as to sanitary status and communicable diseases among the troops.

Observations on Fecal Examinations in Poliomyelitis*

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IN 1912 Kling, Pettersson, and Wernstedt [1] obtained the virus of poliomyelitis in material from the human intestine and in 1915, Sawyer [2] corroborated this finding. However, these observations lay fallow for 22 years until Harmon,[3] in 1937, reported 6 positive tests with colonic washings from 5 of a series of 20 poleomyelitics. Since then routes of inoculation other than the cerebral have been reëmployed and many observers [4-11] have found the virus in human stools. Recently Howe and Bodian [14] have simplified fecal examinations and apparently have made the tests more delicate by utilizing the mere nasal instillation of untreated feces. With this method they reported success in 10 of 14 tests; all of 7 samples collected in the first week of the disease being positive.

In stools the virus is active and stable. It appears in abortive as well as in paralytic poliomyelitis; that is, in the common as well as in the classical forms of the disease. Convalescent carriers and healthy carriers have been described.[5, 8, 10] Virus has been demonstrated in sewage,[12, 12a] and chemical methods of concentration have been devised [13] which are applicable to the sampling of sewage.

Epidemiology

Nasopharynx vs. intestines

Although the virus may also be detected in nasopharyngeal washings, it has been found more readily in stools, and it seems more persistent in the intestinal tract than in the nose.

A schematic comparison of the relative importance of nasopharyngeal washings and of stools as a source of poliomyelitic virus is shown in Figure 1. The figure is marked off in weeks for emphasis which hides the fact that by far the largest proportion of positive results from the nose were obtained in the first 48 hours of the disease. In contrast to this, virus may be found in stools commonly for days and weeks, and occasionally for months. In fact, a convalescent carrier has been described who harbored the virus for 100 days or more.[8]

Stools may be used in case finding

The usual form of human infection in poliomyelitis consists in abortive attacks. These have no single distinctive feature and can be recognized only during epidemics or by animal inoculation. They are characterized as minor febrile episodes which affect chiefly the children of a household in which there is a

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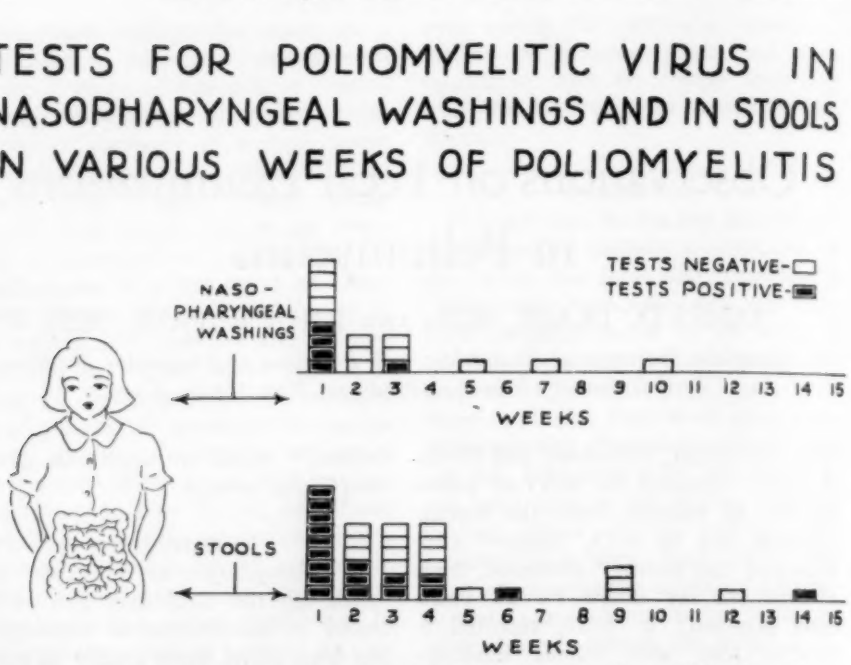
TESTS FOR POLIOMYELITIC VIRUS IN NASOPHARYNGEAL WASHINGS AND IN STOOLS IN VARIOUS WEEKS OF POLIOMYELITIS
TESTS NEGATIVE-
TESTS POSITIVE-
NASO-PHARYNGEAL WASHINGS
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
WEEKS
STOOLS
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
WEEKS

FIGURE 1—Schematic representation of results of tests for the virus which shows the superiority of stools over nasopharyngeal washings, and which indicates that stool examinations may be the more valuable for case finding

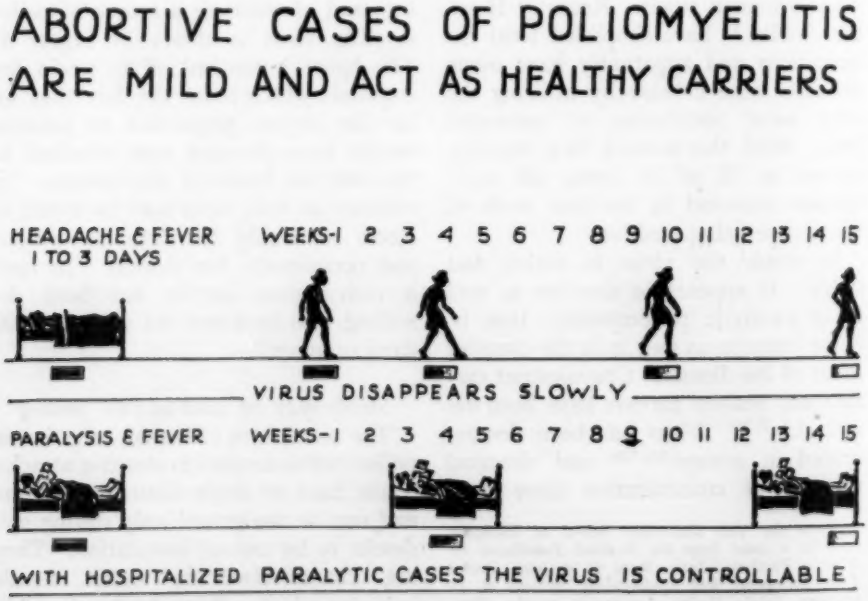
ABORTIVE CASES OF POLIOMYELITIS ARE MILD AND ACT AS HEALTHY CARRIERS
HEADACHE & FEVER 1 TO 3 DAYS
WEEKS-1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
VIRUS DISAPPEARS SLOWLY
PARALYSIS & FEVER
WEEKS-1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
WITH HOSPITALIZED PARALYTIC CASES THE VIRUS IS CONTROLLABLE

FIGURE 2—Hygienic implications of abortive poliomyelitis which furnishes many mobile convalescent intestinal carriers of the virus

frank case with paralysis.[15] The following are the symptoms: fever, lassitude, headache, vomiting, sore throat.

By animal inoculation the virus may be recovered from abortive poliomyelitis in nasopharyngeal washings collected early in the disease [16, 17, 5] or, more readily it may be found in the stools [4, 18] for weeks or for even months,[8] and thus the latter test may be useful for diagnosis. It seems important that virus has been found with greater frequency in individuals under 5 years of age than in those older.[11]

Some hygienic implications of the abortive cases are illustrated in Figure 2 which is arranged to show that, while the paralytic case is immobilized frequently in a hospital bed or at home, other children may have had the abortive form of the disease. Such children may be sick for a day or so and run around freely as convalescent carriers for weeks or months.

Sewage

During the summer and fall of 1939 poliomyelitic virus was detected in sewage in two urban epidemics, those at Charleston, S. C., and Detroit, Mich. Four positive samples were collected in close relation to isolation hospitals. In addition, one sample of domestic sewage collected in Buffalo gave a suggestive test. As the epidemics subsided negative results were obtained with samples collected from all these sites and from many other urban and domestic samples collected in the epidemic areas.[12] To continue the study we have been testing samples of sewage from New Haven and from New York each month since February, 1940. Occasionally pathogenic bacteria have been encountered. With three samples the monkeys have developed tuberculosis of the omentum. This is unusual as the chief tuberculous lesion in monkeys, and as the animals were inoculated intra-abdominally it is likely that there were viable tubercle bacilli in these 20 cc. samples of raw sewage.

The positive results with poliomyelitic virus are an index of the large amount of virus which sewage may contain, and they point to our grossly contaminated waterways as a natural source of virus. Indeed, the magnitude of its distribution makes one hesitant in accepting the direct infectivity of the virus. It might well be that another cycle, with passage through a non-human host, for example, is necessary before the virus could become infective for man again. At any rate, in polluted waterways there is a great natural source of virus to which many forms of life are exposed besides man.

Contaminated water

It is to be remembered that there are many methods of transmitting experimental poliomyelitis in the monkey, and that this may also hold for man. Among the experimental routes is the gastrointestinal tract. This raises the question as to whether poliomyelitis may be water-borne. The possible importance of contaminated water rests on the intestinal features of poliomyelitis; its summer prevalence; and the production of poliomyelitis by feeding experimentally contaminated food. However, epidemiological teaching considers water-borne epidemics to be unlikely because the distribution of cases is generally at variance with the idea. The situations where the incidence of poliomyelitis is highest are in rural epidemics, and a typical locus where the disease flourished is illustrated in Figure 3. There are children, verdure, domestic animals, birds and insects. Also there is open water and there is freshly broken ground. A rural community, such as this, may have an explosive outbreak with an incidence of infection many times that encountered in the most severe urban epidemics. But generally farms have their own water supply, and

FIGURE 3—The setting of a rural outbreak of poliomyelitis in western Connecticut in 1939. The healthy children include one convalescent carrier following a missed attack of abortive poliomyelitis; after 3 weeks virus was detected in his stools. The picture is a reminder that many living things besides man may come in contact with the virus.

we must conclude that most epidemics are not water-borne *in the usual enteric sense*. However, polluted water may be important in some other way as yet undisclosed. For beginning with Caverly [19] in 1894, epidemics have been described which were in relation to river valleys. Last year we observed an example of this in Connecticut and identified some cases by demonstrating virus in their stools.[20] In Sweden, the terrain is such that water courses and lines of human traffic are sufficiently divergent so that a relation between poliomyelitis and lakes or rivers is accepted by at least one authority.[4] Epidemics have spread up as well as down river valleys.

PROPHYLAXIS

Chlorination

Data on the chemistry of the virus indicate that it may be highly susceptible to oxidizing agents, and the early work showed that it was inactive after chlorination, but the dosage and duration of contact were beyond practical limits.[21] The subject has been approached again, and in a recent paper Kempf and Soule [22] reported that dosages of chlorine as high as 0.5 p.p.m. and exposures of 1 hour were ineffective. In our own experiments with chlorine we have been impressed with the differences exhibited by two strains; one was highly susceptible while the other was quite resistant to chlorine. Infected monkey cord was our source of virus as it was in the study of Kempf and Soule. The resistance of monkey cord to chlorine is of considerable academic interest, but for practical reasons it is of less immediate importance than the question of the effect of chlorine on human feces containing native virus. We have run one experiment on the chlorination of patients' feces; unfortunately the controls were irregular.

Problems of control

What should a health officer advise as a measure of control when poliomyelitis visits his community? It seems unlikely that quarantine restriction can be placed effectively on what must be our greatest human source of virus; namely, convalescent abortive cases. No practical method of handling these children is obvious because they are so numerous and because laboratory control is not feasible.

How should human excreta be treated? Is it in rural communities or with urban sewage that effort should be expended to control the virus from the intestinal tract? Virus must enter our waterways, and theoretically, at least, polluted water might furnish a natural reservoir of virus for the contamination or infection not only of man but also of all forms of life. Formerly insects were excluded as possible vectors because the virus is not found in the blood stream. Now, with more knowledge of the cutaneous infectivity of certain strains of poliomyelitic virus,[23] and with the existence of large amounts of virus in nature, insects cannot be excluded from consideration. Furthermore, it is well to bear in mind that birds appear to play a part in equine encephalomyelitis[24] which is another summer viral disease of the central nervous system. Also it is pertinent to state that Shope[25] found that infected worms may be active in the overwintering of epidemic swine influenza.

Consequently it is not evident that the presence of poliomyelitic virus in sewage is a direct or even an indirect link in the chain which usually or even occasionally leads this infectious agent from one person to another. We know merely that under certain conditions it is there, and we believe that the circumstantial evidence, at least, makes a good case for the extra human host. Therefore until more knowledge is available on this complex subject it seems unwise for the health officer to introduce new methods of control.

SUMMARY

New facts about poliomyelitis are available, and they are largely concerned with the intestinal features of the disease. This is encouraging to those who attach significance to the frequency of summer outbreaks.

As yet the new information has not led to the formulation of any practical rules for control. However, the virus has been shown to be widely distributed and relatively stable.

Experimental methods, long so closely restricted to problems of laboratory poliomyelitis, can now be applied more directly than before to epidemiological problems of the natural disease.

REFERENCES

1. Kling, C., Pettersson, A., and Wernstedt, W. *Communications Inst. méd. Etat Stockholm*, 3:5, 1912.
2. Sawyer, W. A. An Epidemiological Study of Poliomyelitis. *Am. J. Trop. Dis. & Prev. Med.*, 3:164, 1915.
3. Harmon, P. H. (Discussion of article by Toomey, J. A.) Active and Passive Immunity and Portal of Entry in Poliomyelitis. *J.A.M.A.*, 109, 6: 406 (Aug. 7), 1937 and personal communication.
4. Kling, C. Recherches sur l'épidémiologie de la poliomyélite. *Acta Soc. Med. Suecanae*, 35, 1:23, 1929.
5. Trask, J. D., Vignec, A. J., and Paul, J. R. Poliomyelitis Virus in Human Stools. *J.A.M.A.*, 111:6 (July 2), 1938.
6. Kramer, S. D., Hoskwith, B., and Grossman, L. H. Detection of the Virus of Poliomyelitis in the Nose and Throat and Gastro-Intestinal Tract of Human Beings and Monkeys. *J. Exper. Med.*, 69, 1:49 (Jan.), 1939.
7. Kling, C., Olin, G., Magnusson, J. H., and Gard, S. Nouvelles Recherches sur l'Élimination du Virus Poliomyélitique par les Matières Fécales. *Bull. Acad. de méd., Paris*, 121:826 (June 13), 1939.
8. Lépine, P., Sédallian, P., and Sautter, V. Sur la Présence du Virus Poliomyélitique dans les Matières Fécales et sa Longue Durée d'Élimination chez un Porteur Sain. *Bull. Acad. de méd., Paris*, 122:141 (July 18), 1939.
9. Howe, H. A., and Bodian, D. Production of Experimental Poliomyelitis from Untreated Stools. *Proc. Soc. Exper. Biol. & Med.*, 41, 2:538 (June), 1939.
10. Kramer, S. D., Gilliam, A. G., and Molner, J. G. Recovery of Virus of Poliomyelitis from Stools of Healthy Contacts in Institutional Outbreaks. *Pub. Health Rep.*, 54:1914 (Oct.), 1939.
11. Trask, J. D., Paul, J. R., and Vignec, A. J. I. Poliomyelitis Virus in Human Stools. *J. Exper. Med.*, 71, 6:751 (June), 1940.
12. Paul, J. R., Trask, J. D., and Gard, S. II. Poliomyelitic Virus in Urban Sewage. *J. Exper. Med.*, 71, 6:765 (June), 1940.

12a. Foreign Letters. Poliomyelitis Virus in Sewer Water. *J.A.M.A.*, 114, 22:2232 (June 1), 1940.

13. Gard, S. III. Method for Detecting Poliomyelitic Virus in Sewage and Stools. *J. Exper. Med.*, 71, 6:779 (June), 1940.

14. Howe, H. A., and Bodian, D. Untreated Human Stools as a Source of Poliomyelitis Virus. *J. Infect. Dis.*, 66:198 (May-June), 1940.

15. Paul, J. R., Salinger, R., and Trask, J. D. Studies on the Epidemiology of Poliomyelitis. I. Methods and Criteria for the Detection of Abortive Poliomyelitis. II. The Incidence of Abortive Types of Poliomyelitis. *Am. J. Hyg.*, 17, 3:587 (May), 1936.

16. Taylor, E., and Amoss, H. L. Carriage of the Virus of Poliomyelitis, with Subsequent Development of the Infection. *J. Exper. Med.*, 26:745 (Nov.), 1917.

17. Paul, J. R., and Trask, J. D. The Detection of Poliomyelitis Virus in So-called Abortive Types of the Disease. *J. Exper. Med.*, 56, 3:319 (Sept.), 1932.

18. Vignec, A. J., Paul, J. R., and Trask, J. D. The Recovery of the Virus of Poliomyelitis from Extra-Neural Sources in Man, with a Survey of the Literature. *Yale J. Biol. & Med.*, 11, 1:15 (Oct.), 1938.

19. Caverly, C. S. Preliminary Report of an Epidemic of Paralytic Disease, Occurring in Vermont, in the Summer of 1894. *Yale M. J.*, 1:1, 1894. Also in: *Infantile Paralysis in Vermont, 1894–1922*, a Memorial to Charles S. Caverly, 1924.

20. Paul, J. R., and Trask, J. D. Poliomyelitic Virus in Stools and Sewage. *J.A.M.A.*, 116, 6:493 (Feb. 8), 1941.

21. International Committee for the Study of Infantile Paralysis. *Poliomyelitis*. 1932, pp. 52–54.

22. Kempf, J. R., and Soule, M. H. Effect of Chlorination of City Water on Virus of Poliomyelitis. *Proc. Soc. Exper. Biol. & Med.*, 44, 2:431 (June), 1940.

23. (a) Howitt, B. F. A Recently Isolated Strain of Poliomyelitic Virus. *Science*, 85:268 (Mar. 12), 1937.

(b) Trask, J. D., and Paul, J. R. The Skin Infectivity of Poliomyelitic Virus. *Science*, 87:44 (Jan. 14), 1938.

24. Fothergil, L. D., and Dingle, J. H. Fatal Disease of Pigeons Caused by Virus of Eastern Variety of Equine Encephalomyelitis. *Science*, 88:549 (Dec. 9), 1938.

25. Shope, R. E. An Intermediate Host for the Swine Influenza Virus. *Science*, 89:441 (May 12), 1939.

Gastroenteritis Outbreaks from Cream-Filled Pastry*

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OUTBREAKS of food poisoning, due to the eating of cream puffs, chocolate eclairs, and other cream-filled bakery products are not uncommon. Most frequently the symptoms are due to a toxin produced by a staphylococcus. Although rarely fatal, food poisoning due to such toxins presents an important public health problem. The short incubation period, the acute onset, and the high incidence among those exposed, produce public alarm out of all proportion to the severity of the condition in the individual case.

Six outbreaks causing a total of more than 200 cases were reported by the New Jersey State Department of Health.[1] Gilbert, Coleman, and Laviano[2] reported on finding *Staphylococcus aureus* in the cream filling and in two fecal specimens from patients in an outbreak occurring in 1930 due to cream puffs and chocolate eclairs. Staff and Grover[3] reported an outbreak due to cream-filled pastry which was responsible for 208 cases and 3 deaths in March, 1935. In this outbreak *Salmonella enteritidis* was believed to have been the causative organism. Geiger[4] reported an outbreak in 1937 apparently due to custard cake from which *Staphylococcus aureus* was recovered in a high count.

Roberts[5] in 1939 reported "a third outbreak of staphylococcus food poisoning in Hamilton, Ontario." Two previous outbreaks which had occurred in March and May, 1938, were responsible for 21 and 8 cases respectively. Both were due to cream-filled pastry from the same bakery. The third outbreak in March, 1939, due to cocoanut cream pie, was responsible for 96 cases. *Staphylococcus aureus* was isolated from the pastry, from gastric contents and feces of patients, from pastry bags, and from milk taken from a can at the bakery. The organism was also demonstrated in cultures taken from swabs of the nose and throats of employees. Other similar outbreaks have been reported in the literature and in the press.[6] Undoubtedly many have occurred which have not been reported.

A review of the records of the New York State Department of Health during the 5 year period 1935–1939 inclusive disclosed 31 outbreaks in Upstate New York, totaling 1,814 cases, which were apparently due to staphylococcus toxin. Seventeen of the 31, involving 1,246 cases, were believed to have been caused by cream-filled baked goods. *Staphylococcus aureus* was found in the suspected food in 9 of the

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outbreaks caused by cream-filled baked goods and a toxin was demonstrated in 3 of these. In one, *Staphylococcus albus* was isolated, and in 3, staphylococcus, type not designated. In 4, the baked goods believed responsible were not available for laboratory examination. However, in each of the latter outbreaks the onset of symptoms within 3½ hours of eating the food indicated that the illness was due to a toxin.

It is the common opinion among bakers and apparently others that it is unwise to manufacture chocolate eclairs and cream puffs during the hot summer months. However, the New York State Department of Health records show no special high incidence during the summer months in the 17 outbreaks. Only 6 occurred in the period from June 1 to September 30, and at least 1 occurred during each of the 12 months, with the exception of July. (See Table 1.)

TABLE 1

Reported Cream-filled Baked Goods Outbreaks from 1935 to 1939 in Upstate New York

Date	*Location*	*Number of Cases*	*Suspected or Incriminated Food*	*Hours Incubation Period*	*Causative Organism*
1/26/35	Auburn	200	Choc. Eclairs	2½	*Staph. Aureus*
4/23/35	Westchester County	700	Choc. Eclairs & Cream Puffs	1–4	*Staph. Aureus*
6/30/36	Albany	8	Choc. Eclairs	2–4	Staphylococcus
9/19/36	Endicott & Johnson City	150	Cream Puffs	2–4	Staphylococcus
3/ 5/37	Bayshore, L. I.	13	Choc. Eclairs & Cream Puffs	Within 6	*Staph. Albus*
4/24/37	Rochester	50	Cream Filled Pastry	3	Staphylococcus
5/23/37	Troy	7	Strawberry Cream Pie	3	No Specimen
6/ 2/37	Troy	15	Strawberry Cream Pie	1–4	*Staph. Aureus*
6/ 9/37	Troy	5	Cocoanut Cream Pie	½–1	No Specimen
8/ 2/38	Seneca Falls	2	Cream Pie	3½	No Specimen
8/ 6/38	Plattsburg	5	Cocoanut Cream Pie	1	*Staph. Aureus*
10/23/38	Newfeld Town	2	Cream Puffs	3½	*Staph. Aureus*
10/23/38	Newburgh	40	Choc. Eclairs	2½–3	*Staph. Aureus*
11/ 2/38	Poughkeepsie	5	Custard Pie	1–3	No Specimen
11/ 8/38	Hudson	9	Cream Puffs	4	*Staph. Aureus*
2/ 5/39	Gloversville	10	Cream Puffs	Short	*Staph. Aureus*
11/28/39	Troy	25	Choc. Eclairs	3¼	*Staph. Aureus*

Five of the gastrointestinal outbreaks due to cream-filled baked goods were traced to a single bakery in the Albany District. It is interesting to note that although many bakeries in the Albany district manufacture cream-filled pastries, all outbreaks in the district caused by these products in a 5 year period were traced to this one concern. The first of these occurred on April 30, 1936, and consisted of 6 cases in an Albany manufacturing plant following eating of chocolate eclairs; the second was May 23, 1937, consisting of 5 cases due to a strawberry cream pie in a family in Troy, N. Y. The next one, June 1, 1937, produced 12 cases in Troy, also due to strawberry cream pies. The fourth outbreak occurred on June 9 of the same year and was responsible for 3 cases due to cocoanut cream pie in Rensselaer City. The fifth outbreak was responsible for 16 cases in Troy and vicinity and for 9 in Columbia County, some forty miles distant from the bakery. During one of the earlier outbreaks, that of June 1, 1937, nose and throat cultures were taken from the employees of the bakery. The laboratory isolated *Staphylococcus aureus*, with the characteristics of those frequently associated with food poisoning, both from a specimen of the implicated strawberry cream pie and from a nose culture from the proprietor.

The most recent outbreak is a good example of the usual history. On November 30, the local health officer reported 4 cases of acute gastroenteritis among the employees of a local store who a few hours before had eaten chocolate eclairs coming from the Z

TABLE 2

Cases of Gastroenteritis in Troy, N. Y., and Columbia County Due to Chocolate Eclairs

Case	Sex	Age	Time and Date of Onset	Hours Incubation Period	Symptoms	Remarks
			Nov. 28, 1939			
F. K.	M	13	8:45 p.m.	2¾	Cramps, diarrhea, and vomiting	Eclairs from lot baked 11/28/39—eaten 6 p.m. same day
Mrs. F. K.	F	30	11:30 p.m.	5½	Cramps, diarrhea, and vomiting	Eclairs from lot baked 11/28/39—eaten 6 p.m.
B. K.	F	15	10 p.m.	4	Cramps and diarrhea	Eclairs from lot baked 11/28/39—eaten 6 p.m.
R. K.	F	20	10 p.m.	4	Cramps, diarrhea, and vomiting	Eclairs from lot baked 11/28/39—had dinner with Mrs. K.
S. B.	F	19	4 p.m.	3½	Severe vomiting, diarrhea, and cramps lasting 24 hrs.	2 Eclairs from lot baked 11/28/39—eaten 12:10 p.m.
I. B.	F	25	4:30 p.m.	4½	Vomiting and diarrhea	1 Eclair from lot baked 11/28/39—eaten 12:10 p.m.
H. G.	M	35	6:30 p.m.	6½	Mild nausea only	Eclairs from lot baked 11/28/39—eaten at noon same day
J. F.	M	30	7 p.m.	1½	Cramps, diarrhea, and vomiting lasting 6 hours	Eclairs from lot baked 11/28/39—eaten at 5:30 p.m.
D. B.	M	45	7 p.m.	4½	Anorexia, nausea, headache only	1 Eclair from lot baked 11/28/39—eaten at 2:30 p.m.
Mrs. A. M.	F	?	7:30 p.m.	1½	Cramps, nausea, and diarrhea	1 Eclair from lot baked 11/28/39—eaten approximately at 6 p.m.
G. M.	M	?	8:30 p.m.	2½	Cramps, nausea, and diarrhea	1 Eclair from lot baked 11/28/39—eaten approximately at 6 p.m.
J. C.	M	10	11 p.m.	4½	Cramps, diarrhea, and vomiting	Eclairs from lot baked 11/28/39—eaten at approximately 6:30 p.m.
L. H.	M	55	1:20 p.m.	3	Cramps, diarrhea, and vomiting lasting approx. 12 hrs.	Eclairs from lot baked 11/29/39—eaten 10:20 a.m. 11/29/39
B. W.	F	32	Nov. 29, 1939 12:00	5	Vomiting, diarrhea, and cramps	1 Eclair from lot baked 11/29/39—eaten at 7 p.m.
R. W.	M	9	12:00	5	Vomiting, diarrhea, and cramps	1 Eclair from lot baked 11/29/39—eaten at 7 p.m.
Mrs. E. D.	F	31	?	?	Abdominal pain, vomiting, and diarrhea	1 Eclair of lot baked 11/29/39—eaten at unknown hour
			Nov. 30, 1939			
W. T.	M	67	3 p.m.	3	Abdominal pain, vomiting, and diarrhea	1 Eclair of lot baked 11/29/39—eaten at 12 noon 11/30/39
R. S.	M	24	4 p.m.	2	Abdominal pain, vomiting, and diarrhea	2 Eclairs of lot baked 11/30/39—eaten at 2 p.m.
K. Z.	F	5	6:30 p.m.	1½	Projectile vomiting and diarrhea	1 Eclair from lot baked 11/30/39—eaten at 5 p.m.
C. B. F.	M	65	7 p.m.	1	Abdominal pain, vomiting, and diarrhea	1 Eclair from lot baked 11/30/39—eaten at 6 p.m.
F. M.	F	13	7:30 p.m.	Approx. 1½	Abdominal pain, vomiting, and diarrhea	1 Eclair from lot baked 11/30/39—eaten 6 p.m.
C. M.	F	6	7 p.m.	Approx. 1½	Abdominal pain, vomiting, and diarrhea	1 Eclair from lot baked 11/30/39—eaten 6 p.m.
R. M.	M	21	7:15 p.m.	Approx. 1¼	Abdominal pain, vomiting, and diarrhea	1 Eclair from lot baked 11/30/39—eaten 6 p.m.
J. M.	M	49	12:00	6	Abdominal pain, vomiting, and diarrhea	1 Eclair from lot baked 11/30/39—eaten 6 p.m.
J. K.	M	32	12:00	1	Abdominal pain, vomiting, and diarrhea	2 Eclairs of lot baked 11/30/39—eaten 11 p.m.

bakery. Inquiry at the store disclosed 6 other cases which had occurred on the preceding two days, and further investigation resulted in finding 15 additional cases. All had eaten Z bakery eclairs from lots baked on November 28, 29, or 30. The Z bakery made a specialty of chocolate eclairs, about 80 dozen of which were prepared daily for distribution in four counties in New York State and in the vicinity of Pittsfield, Mass.

A list of the distribution centers, delivery routes, and stores, was obtained, and all places were notified by telephone or personal visit or both not to distribute the products on hand and to inform the local health officers of suspicious cases. The public was advised by radio and items in the local newspapers not to consume cream-filled baked goods from this bakery, and to report any illness following the previous eating of such goods. All cream-filled pastries still remaining in the bakery and all those returned by the various delivery men were destroyed. The proprietor was instructed as to the precautions to be taken if the bakery was to continue making cream-filled pastries. Although not legally required, the bakery closed. However, within a few weeks, the individuals concerned incorporated under a new name and opened a bakery at a new location.

The illness was characterized by severe abdominal pains, nausea, vomiting, and diarrhea. Most of the patients were violently ill for a few hours but recovered promptly. The longest duration of illness was 24 hours. The average period between eating the eclairs and the onset of symptoms was 3.2 hours for 24 of the 25 patients for whom a fairly accurate incubation period could be calculated. The shortest period was 1 hour and the longest 6½ hours (see Table 2). Although illness was caused by portions of three lots of 80 dozen each, or approximately 3,000 eclairs, which were distributed widely in an area within a forty or fifty mile radius of the bakery, careful investigation failed to discover cases in areas other than two rather sharply localized communities, *i.e.*, the City of Troy and vicinity, and a small locality in the vicinity of Hudson in Columbia County. However, in the areas where cases occurred, the incidence was high among those eating the eclairs. This suggests that only a part of each batch of cream filling was contaminated.

Inquiry was made as to the method employed in the preparation of the eclairs. The cream filling was made from the usual formula and consisted of milk, sugar, starch, eggs, salt, and vanilla. The milk and sugar were mixed and brought to a boil. The eggs were beaten and then mixed with the starch and added to the boiling milk and sugar. Salt and vanilla were then added. This mixture was poured into several 2 gallon containers which were placed on the floor of the unheated supply room and allowed to cool, standing from about 9:00 p.m. until 1:00 a.m. the following morning, when the cream filling was poured into a large mechanical cream puff filler (Figure 1). The pastry shells previously prepared were filled, one at a time, by impinging the shell upon the nozzle of the filler by hand. As the pastry shell struck a guard on the nozzle the plunger with attached piston forced the desired amount of cream fill into the eclair. This process usually took about an hour. The eclairs were then sprayed with chocolate frosting, and allowed to remain at room temperature until deliveries, which were usually started at 7:00 a.m. and completed at noon. It is apparent that the period between preparing the mix and the delivery of the eclairs allowed ample time for the development of toxins.

The premises of the Z bakery on inspection were found to be far from

clean. Food and dirt were found behind all the heavier pieces of furniture. Mice and rat droppings were abundant in corners and out of the way places. Parts of the mechanical filler not easily accessible had not been well cleaned.

Nose, throat, and stool specimens were submitted to the State Laboratory from all employees of the plant who were inspected for evidence of skin lesions and respiratory infections. The proprietor was found to have burns, some of them secondarily infected, on his hands and arms. His son had a purulent infection on the fourth finger of his right hand. It was the latter's duty to pour the cooled cream fill into the mechanical filler and to handle each eclair in the filling process. Due to the fact that this individual had ample opportunity to contaminate the material, the lesion on his finger was cultured. Samples of eclairs baked on each of the three days under suspicion were also submitted to the laboratory, some of them obtained from the homes in which cases had occurred.

The majority of the nose and throat cultures showed *Staphylococcus aureus* and *albus*. The cultures from the proprietor's son's finger and cultures taken from the nozzle and base of the filling machine showed almost pure cultures of *Staphylococcus aureus*. A batch of food containing cultures of the strains of *Staphylococcus aureus* from the wound on the proprietor's son's finger, and from the eclair filling was prepared and fed to cats. After eating, these test animals vomited and had diarrhea.

The legal requirements in the state for the production of baked goods are

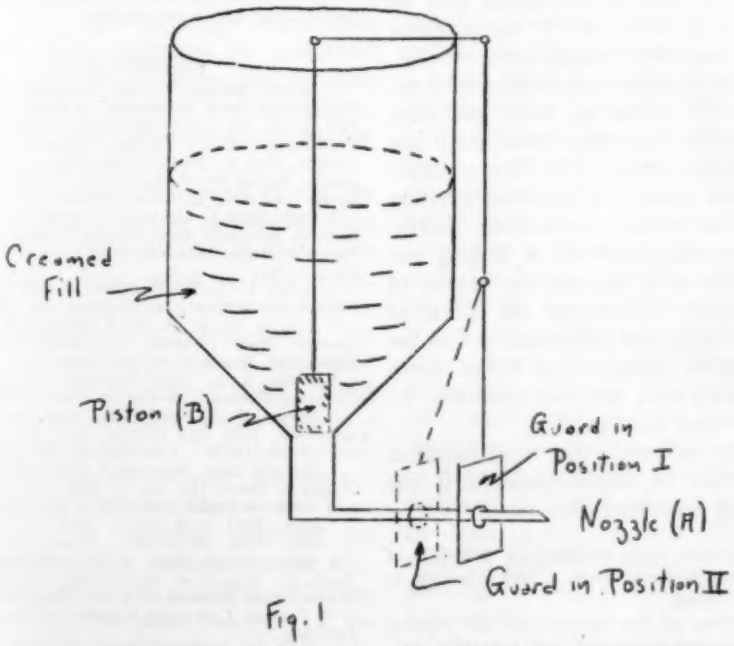

Fig. 1

Diagram of Method of Filling Pastry Shells in the Zampier Bakery at Troy, N. Y. No Scale.

Pastry is impinged on nozzle (A) forcing guard from position I to position II. This lowers piston (B), which forces filling into pastry shell.

general, and under the supervision of the Department of Agriculture and Markets, and concern themselves mainly with the cleanliness of the bake shop, and are not effective in preventing staphylococcus intoxication. One of the local bakers who requested the assistance of the Department of Health in protecting the baking industry from the economic loss following these outbreaks, reported that his business in eclairs and other cream-filled pastries and similar baked goods decreased markedly due to the reaction of the public to the outbreak.

The State Department of Health has no special regulations relative to the preparation of cream-filled pastries. The Westchester County Department of Health,[7] however, has incorporated in its Sanitary Code regulations relative to custard-filled pastries. Their code requires that the entire custard mix be heated to at least 200° F. for a period of 10 minutes, immediately cooled, placed in a refrigerating temperature not over 50° F. within an hour, and kept at or below that temperature until applied to the pastry. The City of Baltimore[8] for some time has been advising bakers to rebake cream-filled pastry. The American Institute of Baking has made efforts to educate the bakers of the country concerning the work of Stritar, Dack, and Jungewaelter[9] on the rebaking of custard-filled baked products. This work has been confirmed by Gilcreas and Coleman.[10]

It is believed that custard-filled pastry can be safely prepared if the following precautions are taken:

1. Exclusion from handling of materials of any person suffering from a skin infection or purulent lesion.
2. Heating of the custard and the custard mix to a temperature of not less than 200° for a period of 10 minutes.
3. Prompt cooling and filling of pastry shells within an hour of preparing the mix.
4. Prompt rebaking of the filled eclairs or cream puffs at 425° F. for 30 minutes.
5. Proper refrigeration between rebaking and consumption is an added precaution, but may be difficult to secure since it tends to decrease the attractiveness of the pastries, makes their display inconvenient, and is not essential.

SUMMARY

1. Outbreaks of food poisoning due to staphylococcus toxins in cream-filled pastries are not uncommon.

2. During the 5 year period 1935–1939 inclusive, 17 outbreaks of gastroenteritis involving 1,246 cases due to eating cream-filled pastries were investigated in New York State exclusive of New York City. Thirteen of these, resulting in 1,227 known cases, were apparently due to staphylococcus.

3. Five of the outbreaks, accounting for 60 cases, were traced to pastries from a single bakery.

4. Chocolate eclairs and cream puffs were most commonly involved, rarely cream-filled pies.

5. Contrary to general belief, the pastries are as liable to cause illness in the colder months of the year as in summer.

6. Prompt handling and rebaking are important factors in prevention.

REFERENCES

1. Eakins, Wallace T., and Blanchard, Cecil K. *Pub. Health News*, Department of Health, State of New Jersey, 19, 7:508, July-August, 1935.

2. Gilbert, Ruth, Coleman, Marion B., and Laviano, Alice B. Food Poisoning Due to Toxic Substances Formed by Strains of the Cloacae-aerogenes Group. *A.J.P.H.*, 22, 7:721 (July), 1932.

3. Staff, Edgar J., and Grover, Maurice L. An Outbreak of Salmonella Food Infection Caused by Filled Pastry Products. *Food Research*, 1, 5:465, (Sept.-Oct.), 1936.

4. Geiger, J. C. Two Outbreaks of Food Poisoning. *Pub. Health Rep.*, 52, 24:765 (June 11), 1937.

5. Roberts, James. A Third Outbreak of Staphylococcus Food Poisoning in Hamilton, Ontario. *Canad. Pub. Health J.*, 30, 590, 1939.

6. Jordan, E. O. *Food Poisoning and Food-Borne Infection*, University of Chicago Press, 1931.
Tanner, F. W. *Food-Borne Infections and Intoxications*, Twin City Printing Co., 1933.
Shrader, J. H. *Food Control*, Wiley, 1939.

7. *Sanitary Code*, Westchester County Department of Health, Article III, Sec. 5, 1938.

8. *Baltimore Health News*, XII, 5:130 (May), 1935.
Ibid., XIII, 9:58 (Sept.), 1936.
Ibid., XIII, 10:65 (Oct.), 1936.

9. Stritar, Joseph, Dack, O. M., and Jungewaelter, Frank G. Control of Staphylococcus in Puffs and Eclairs. *Food Research*, 1, 3:237 (May-June), 1936.

10. Gilcreas, F. W., and Coleman, M. B. (To Be Published.)

NOTE: Acknowledgment is made to the several District Health Officers in New York State whose reports of outbreaks on record in the State Department of Health files were reviewed.

Vital Statistics and National Defense*

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AT what would now be called a "press conference," the late Charles Francis Murphy of Tammany Hall was once confronted by reporters with evidence that a reform wave was gathering momentum. "Well, boys," he said, "I'm for the 'uplift' too, if that's the word!" The word in the minds and on the lips of everyone is now "defense." It may be anticipated that many cats and dogs which have loitered upon doorsteps for unnoticed years will now seek to slip through doors, which the word has opened, by claiming their indispensability to the national effort.

In this paper I am going to run the risk of sponsoring for admission what some will regard as one of these cats and dogs. I am going to raise again, wholly as a matter of personal opinion and without very much argument, the long standing question of universal registration in the United States. I will contend that universal registration is a defense requirement. I shall also insist that my remarks receive the respect merited by scientific discussion. Your indulgence is therefore solicited for some preliminary remarks on the relations of science and scientists, including statisticians, to social interest. I believe that a consideration of this subject is essential to a balanced view of my major theme.

The judgments and behavior of human beings are subtly influenced, even when they are scientists, by the prevailing foci of social interest, as well as by the prevailing fashions of thought and interpretation. This truth caught up with me some years ago when I was a graduate student. I had been asked to undertake some statistical research for a well known organization. I found what I thought were relevant data in certain published rates of mortality from certain primary causes of death. I proposed to draw various conclusions respecting changes in social habits from changes in these mortality rates over a period of time. At this point Dr. Louis I. Dublin suggested to me that the time trends which I found in the rates might reflect nothing more than changes in the prevailing fashions of medical diagnosis. The revelation of such possibilities, with its immediately shattering effects upon my expectations of drawing significant conclusions, has darkened my whole subsequent outlook on data. I observe with gloom much which is painted in colors of sweetness and light; and I hold Dr. Dublin accountable.

I fancy, however, that I am speaking to fellow pessimists. Probably no group of persons is more conscious than the members of this audience of the fact that phenomenal observations are

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characteristically distorted by human preconceptions. The statistician has the difficult task of seeking truth by combining the distorted reports of other observers. Happy indeed is he who can be sure that the individual errors of these observers are "compensating." How can errors offset each other when all observers are equally subject to the distorting effects of fashion and of current trends of opinion?

Even if fashion is without influence upon the character of observations or upon the conclusions drawn from data, the foci of public interest are likely to determine in the first instance the choice of the subject for investigation, and thus to affect the directions in which "knowledge" accumulates. In the long run, this form of selection may be as important in its biasing effects as are more deliberate and more demonstrable forms of manipulation. After seven years in the midst of federal statistical activities in Washington, I would be able to cite few if any instances of deliberate distortion or suppression of scientific research findings. But I believe that the projection or non-projection, the authorization or non-authorization of federal research activities, has sometimes had an equivalent result. I concur with David Lindsay Watson in his significant book *Scientists are Human* that "the passions and self-deceptions which scientific men share with the rest of mankind are supremely relevant to the real human worth of the 'scientific truth' that they create." This is one of the inescapable limitations within which we work.

One conclusion from these reflections is that statisticians usually have tasks which are as much sociological as they are logical and mathematical. Their technical skills must embrace a knowledge of what to count no less than how to count. To the layman the distinctions seem clear-cut as between truth and error, black and white, good and bad, urban and rural, farm and non-farm, fatal and not-fatal, born and still-born. Broadly speaking, these delineations are based upon social conceptions which are indistinct and subject to variation in time and place. Competent judgments concerning each of them entail, or suggest the need of, sociological exploration.

Let me illustrate: Assume that it is desired to compare the birth rates and death rates of rural and urban populations, in relation to trends in the rural-urban distribution of population. The questions affected by the results of such comparisons are important and the problem is clean-cut. The conceptions expressed by the terms "urban" and "rural," however, are not clean-cut. What do they mean? Agreement could probably be reached upon instances of "urban" and of "rural" right here in Wayne County, Mich. But upon the essential character of the distinction agreement would be doubtful. The terms must have something to do with varying ways of life, since each of us recognizes the urbanity of friends who live in the country, and the survival of rural traits among Appalachian highlanders who migrate to industrial centers. Even the occupational classifications of individuals, or the presence or absence of certain utilities which are adjuncts to living, provide no certain criteria. The U. S. Bureau of the Census is compelled to rely upon such unrefined and arbitrary criteria as municipal incorporation or non-incorporation (except in New England and in certain other localities), the population size of incorporated places (regardless of social structure), and gross population density within the haphazard boundaries of minor civil divisions.

What does all this have to do with vital statistics, with national defense, and with my previously announced intention to advocate universal registration? It is intended to illustrate the

inability of science to free itself wholly from its social millieu, to record its dependence upon sociologically defined conceptions, and to suggest the advisability of occasional reëxaminations of its socially derived conceptual premises, especially in periods of revolutionary social change. We are now in such a period. The theme of national defense, in its present context, certifies to the revolutionary character of our period. If, as I believe, the lives and living habits of our people are to be rapidly and radically altered in the future, should we not review the standpoints from which the statistics of life are collected and compiled? Perhaps universal registration, if instituted, would not be regarded as an extension of the present tasks of vital statistics. It would nevertheless be closely related to your present work, and it would be based upon changing conceptions of the need for information about the lives of human beings.

Vital statistics, the statistics of life, have traditionally been concerned with those important terminal points of individual human existence, birth (including stillbirth) and death. This seems appropriate in an individualistic society in which everything that happens between these terminal events is very largely the individual's own affair, or that of his parents or guardians. Sometimes the conception of the field is extended to include those exceptionally consequential way-points of individual lives, marriage and divorce. But the world of individualism—like it or not—is on the defensive. Free people must defend or prepare to defend their possibilities of individuality; their rights to strive for the attainment of their highest potential development as human, intellectual, and spiritual entities.

Words are the signposts by means of which we recognize our intellectual and moral surroundings. Many of us are bewildered in a world in which some words have suddenly lost their familiar meanings. An intimate friend of mine insists on knowing, when we talk of defense, what it is we are going to defend. A military answer can be made in precise terms: In certain contingencies we can and must defend such and such utilities, military strongholds, territorial areas and waters. But the more important answer is that we must defend our way of life in a world all major divisions of which but our own have abandoned or are threatened with the loss of that way of life. Nonsense, says my friend; we can wait to talk about defending our way of life until we are threatened with war upon us, and that does not appear in prospect, unless we ourselves precipitate it. To which I reply, war is already being waged upon us; you have failed to note that the meaning of the word has changed. War and defensive needs have both become total. Military preparations apply only to the central segments of our defensive lines. Industry, science, administration, morale, the national mentality, and the national health and vitality are related and supporting segments of the front.

All but a negligible number of Americans hope that action will not be required on the military segments of our defensive front. Indeed, there is much competent opinion that our own military action at this time would detract from our all-important aid to Great Britain, and hence be ill-timed with respect to the grand strategy of American defensive policy. Action on the supporting flanks, however, is immensely important. And as long as the task of total defense confronts us, all segments of the front and the individuals thereon, with single-mindedness of purpose, must contribute to and be subordinated to, defense requirements. For the time being the individual is important only to the extent that by

serving the interests of our free nation he helps to preserve the possibility of individuality in the world to come. The vitality of the nation, conceived as a collectivity distinct from the individuals who compose it, has become supremely important.

Births and deaths, as well as marriages and divorces, from this standpoint, are important data in the assemblage of information concerning the vitality of the nation. But they portray only a part of the total picture which has come to be of national importance. The nation must know what happens to its citizens between their terminal points. We obtain such intermediate information in a spotted, fragmentary, and cross-sectional manner, by periodic censuses, by school records, by surveys, by tax returns, by special reports upon certain types of social or antisocial activities or economic transactions. We do not obtain consistent, longitudinal information, which regards each person as a persisting, identifiable entity within the nation.

Through its agencies of government and its governmentally regulated utilities, society has recorded my birth, my marriage, my parenthood, my ownership of an automobile, my right to operate it, my eligibility to vote, my income, my possession of real property, my equitable contributions to the costs of government, my use of a telephone, my consumption of gas and electricity, my right to travel outside our national boundaries, and many other personal items about me, in addition to those which I have divulged in the decennial census. Thus, it occasionally records my communicable diseases. It will ultimately record my death. Is it not reasonable to bring some of these records into statistical juxtaposition? To regard more than the first and the last of them as data of my life? To regard my life as a dynamic, continuing existence, which functions and is punctuated by events; and not as something which comes into existence, and is then lost sight of, save at ten year and other irregular intervals, until the single, final act by means of which it disappears?

I am urging that some group of statisticians, perhaps those of this audience, come to regard lives as continuing, dynamic, functioning, whole entities; to be statistically summated in their processes of functioning and not only at their beginnings and endings. The first step toward the statistical implementation of such a viewpoint would seem to be the establishment of a system of universal registration and identification, starting with birth and serving through life as a master record, to which innumerable partial registers could be related.

I shall not attempt further in this paper to indicate the character of such a system. Its establishment has long been regarded by many thoughtful students as desirable, but as so inconsistent with American traditions as to be impossible of attainment. I believe this supposition to be directly opposite to the actualities. We now have what amounts to compulsory registration of everybody, but in a fragmentary manner, and for diverse purposes. Our innumerable registers have never been combined into a master register. More than 50 million workers have registered for benefits under the Old Age and Survivors Insurance system of the federal government; 47 million new applicants for work (including a substantial number of duplications) have been registered with the United States Employment Service since July 1, 1933; a much smaller but nevertheless large number have registered for relief and work relief; 11 million registered in the 1937 census of unemployment; although no accurate summary figures are available, it is probable that 45 million persons have registered for drivers'

permits; perhaps 60 million have registered as voters in elections; in a few days 16 million young men will register for selective service, and several millions are now answering the questions prescribed under the Alien Registration Act.

We pride ourselves on the universality of our public school system, under which very few native born Americans have not in their youth been registered under compulsion by agents of the State; and the birth and death registration areas, we proudly assert, are now "complete."

Why not try to achieve consistency and order among these numerous and omnipresent partial registration systems by establishing a single "master" register, from which each person may be able to establish his existence and his identity? The creation of the register would be a scientific and administrative task, sociologically motivated, of very large magnitude. Its difficulty is probably the real reason why it has not been undertaken hitherto. But the nation has undertaken successfully other difficult tasks when convinced of their importance. Universal registration would indeed make possible the compilation of new kinds of vital statistics, suitable to the needs of universal, selective service in the cause of a total defense of our national liberties.

DISCUSSION

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WE are indebted to Dr. Rice for a very suggestive and useful contribution. I believe that a system of universal registration in the United States will ultimately be developed and that such a system will prove exceedingly valuable, not only in providing for national defense but in putting at our disposal a gold mine of information concerning the life of our people.

As Dr. Rice has pointed out, much of the data which would be collected by the central registry is now collected in scattered repositories but remains, for the most part, unused. It would take really little additional effort to bring all of these threads on the individual together at one place. Here, modern methods of filing and of indexing, of tabulation and of analysis, should revolutionize our knowledge of the effects of our various social institutions. Think how valuable such a repository would prove now to our various defense committees in their search for the variety of skills which are needed in our defense program. And in normal peace times, what an opportunity would be at the disposal of the lucky statisticians and sociologists who would be connected with such an organization.

There will be considerable resistance to the establishment of a universal system of registration. The necessary legislation will be difficult to obtain. It will be objected that a central system of registration will add enormously to the knowledge and, therefore, to the power of the federal government. Cries of regimentation will undoubtedly be heard.

The system will also involve a very sizable expenditure. In a population of 130-odd million, one record a year per individual might involve an annual budget running in the direction of a hundred million dollars. Dr. Rice as the Assistant Director of the Bureau of the Budget will know better than any one else how difficult it would be to

justify such an appropriation under current conditions. On the other hand, one could point to many valuable services which such universal registration would render. There would be compensating savings in the cost of the decennial census. It would be unnecessary in most cases to collect new data, and there should be a sizable saving in research conducted here and there by the various departments of government. This registry office would be a research agency par excellence.

It will take a long time before such a system as Dr. Rice has outlined could be established, and it would be well in the meanwhile to explore the possibilities, legal, financial, and administrative. I would recommend that a committee of the Section be appointed to study the problem and report back to the Association from time to time.

Exhibits*

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HEALTH educators have recently become increasingly concerned about the effectiveness of their efforts. No longer satisfied with their own subjective judgments of their work, they have begun to ask: Is this poster attractive to other people? Is this pamphlet interesting? Will this exhibit teach what we think it does? Does the public really examine our material, and do our messages get across?

It is difficult to get reliable answers to such critical questions about methods of health education. A given poster, exhibit, motion picture, or pamphlet might be considered excellent by one leader and be labeled poor by another equally competent. Disagreements in judgment are, in fact, as common as agreements. Recognizing, therefore, that subjective evaluation, even by experts, fails to furnish an index of effectiveness, Homer Calver, of the American Museum of Health, suggested a comprehensive study of the exhibits assembled by the Museum in the Medicine and Public Health Building at the New York World's Fair. Firmly convinced of the need for more objective evaluation, the Museum and the Public Health Service undertook the study, from which a few of the practical conclusions may be given.

In this evaluative study, the analysis has been focused on the public's reaction to the exhibits, rather than on the characteristics of the exhibits themselves. Thus, in order to measure the effectiveness of the exhibits, data were collected to answer such questions as:

1. Does this exhibit attract attention?
2. Does it sustain interest?
3. Can it be easily understood?
4. Does the audience get the message?

In order to answer the first two questions, the behavior of a random sampling of 3,000 visitors to the building was observed. In each instance, a member of the staff followed an individual through the building and recorded each exhibit at which the visitor stopped, together with the length of time (by stop watch) he remained there. The summarized record indicates the relative popularity of the display and how well it retains the interest of those whose attention it attracted.

Answering the question, "Could it be easily understood?" required the collection of several types of data.

a. How long did it take to read the legend? This factor, together with the average length of time individuals actually looked at the exhibit, gives presumptive evidence of the extent to which it was possible for the total message to be obtained.

b. Were the words used too technical for the public to understand? The relative difficulty of each word in the legends was checked against the frequency with which it was in common use, as shown by the Thorndike

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Word List of the 20,000 most commonly used words.

c. Was the exhibitor's objective readily apparent to the spectator? A number of individuals were asked what they thought the exhibit was expected to teach, and their opinions were checked against the objective stated by the committee responsible for the exhibit.

Test questions based on the content of the several exhibits were used to measure whether the public learned the message. At a booth called the "Quiz Corner," individuals were tested and the tests were marked according to whether a given exhibit had or had not been seen. By comparing scores obtained before viewing an exhibit and those obtained after viewing it, one index of the effectiveness of the exhibit is secured.

Such then, are a few of the types of data obtained, and the present discussion will be limited to the items listed above. The complete scope of the data will be discussed in the final report, but the examples given here are believed to be sufficent to indicate the method of attack on the problem.

What practical conclusions can be drawn as a result of this study? Even though tabulations are still incomplete, several well defined principles of exhibit construction are apparent from the preliminary analysis. Each such principle or indication of proper technic will be listed and discussed below.

Panels of Statistical Data, Graphs and Tables Fail Signally in Attracting or Retaining Attention—The Pneumonia Exhibit in the Hall of Man was displayed on two walls set at right angles to each other (Figure 1). The right-hand wall presented statistical material, whereas the left-hand wall was made up of panels describing the disease and its course. Adjoining the statistical panel

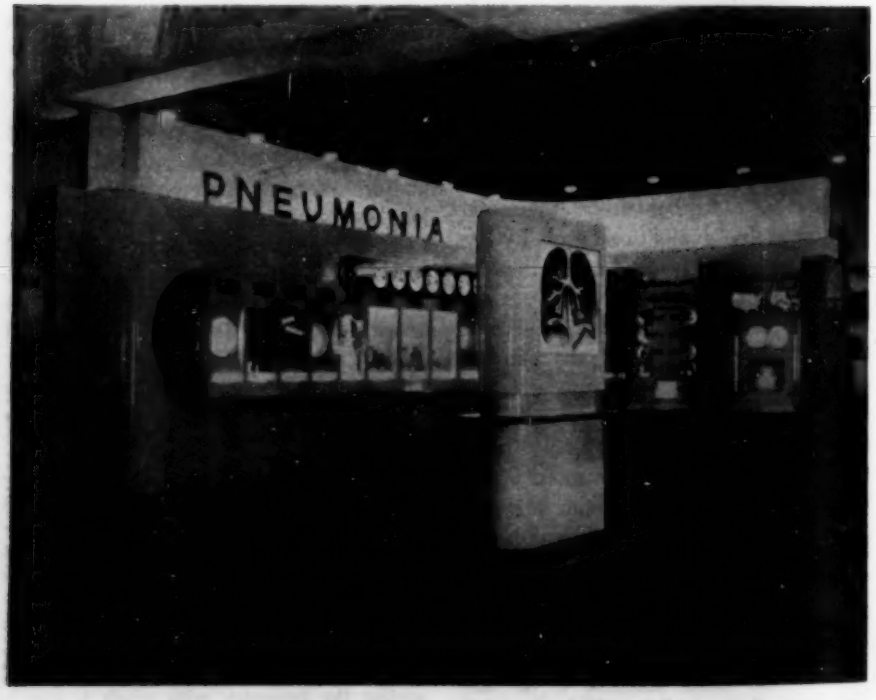

FIGURE 1—Pneumonia Exhibit—Statistical panel on extreme right

was one having to do with proper nursing. Out of 950,000 persons who viewed any part of the Pneumonia Exhibit, 9 out of 10 (88 per cent) spent some time examining the panel describing the disease, whereas only 2 out of 10 (18 per cent) spent any measurable amount of time examining the statistical panel. Even the nursing panel, which might have been considered disadvantageously placed since it was nearest the corner, attracted and held the attention of 3 out of each 10 persons who visited the exhibit. The conclusion here is quite obvious; namely, that any message that might have been conveyed by the statistical panel was totally missed by four-fifths of its possible audience.

The Maze of Superstitions also included a statistical panel and similar observations were taken in that exhibit. Among all those who visited the exhibit, the proportion attracted to the statistical panel was much less than half of the number that visited any other part of the exhibit. One-fourth of all who saw the exhibit looked at every part of it except the statistical panel. In this connection it should be noted that the criterion of "looking at" or "viewing" was the ability of an observer to detect the individual being observed in the act of looking at the exhibit for a period of time measurable on a stop watch.

The Demography Exhibit, portraying various phases of population growth and distribution in the United States, although it occupied a prominent position in the Hall of Man, attracted fewer spectators than any other exhibit of comparable size in that part of the building.

The time required to read the legends in statistical panels was longer than for any other part of the exhibit. Nevertheless, persons who visited or looked at the statistical panels spent less time in such viewing than in looking at any other panel. It is apparent, therefore, that the statistical panels not only failed to attract the attention of a large proportion of the visitors, but they also failed to hold interest in those whom they did attract.

Statistical Panels Frequently Fail to Convey a Message—In order to test how much spectators learned, a series of questions based on the statistical exhibits were presented to visitors. The answers were segregated according to whether or not the individual taking the test had seen the exhibit in question. When the following true-false and multiple-choice tests based on the Pneumonia and Demography Exhibit were used, no significant difference could be detected between the answers of those who had seen the exhibits and of those who had not. In some cases the proportion answering the questions correctly is slightly higher among those who had seen the exhibits, but the result could not be called statistically significant. The questions used are as follows:

More people die from pneumonia than from cancer. True False

The pneumonia death rate is higher in middle age than in infancy. True False

Among the causes of death, pneumonia ranks: first, third, fifth, tenth.

The number of deaths caused by pneumonia each year in the United States is approximately: 20,000, 130,000, 250,000, 460,000.

One-eighth of the world's population now live in America. True False

The greatest number of foreign born persons in the United States in 1930 came from: Germany, Italy, Russia, Ireland.

The conclusion stated just above relates to panels in which a number of facts are presented. In contrast to that conclusion, it appears, therefore, that if a single statistical fact is the major emphasis of an exhibit, it is much more likely to be learned. For example, two such facts in one of the exhibits appear in the pictures of Figure 2. When the following questions were used to test the educational effectiveness of such isolated statistical facts, the proportion

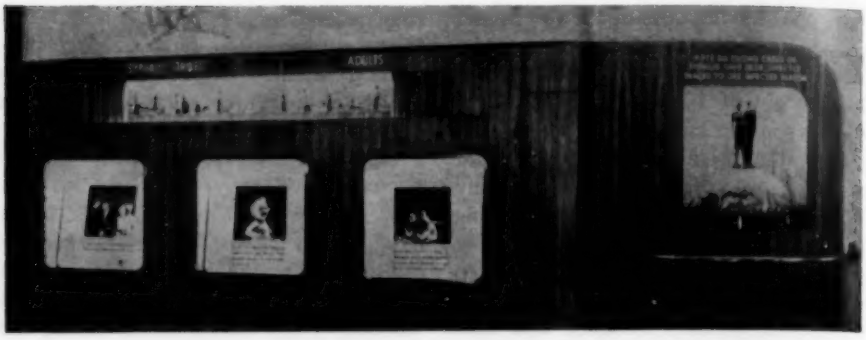

FIGURE 2—Syphilis Exhibit panel

answering correctly was significantly greater among those who had seen the exhibits than among those who had not.

The percentage of the adult population stricken by syphilis is estimated to be: 1%, 3%, 5%, 10%

The largest number of cases of syphilis reported as traced to one infected person is: 2, 24, 56, 106

This small sampling would suggest the importance of limiting statistical material to one or two outstanding facts which are given prominence. This point is being emphasized because many health exhibits consist almost wholly of statistical material, and especially since it seems possible that those whose major interest is in statistics may have overestimated the public's concern for that type of information.

The Message to Be Conveyed Must Be the Focus of Attention—The exhibit called "The First Year of Life" (Figure 3), through its arrangement focused attention on a number of models illustrating the physiology of pregnancy. The sponsors of the exhibit, however, stated as their objective the education of the spectators in the hygiene of pregnancy. Material on the latter subject was arranged in front of and below the models and thus was not the normal focus of attention. In testing the effectiveness of the exhibit, the questions used were limited to the subject of hygiene. The result was that, for each question, the number of correct responses was approximately the same, regardless of whether the exhibit had or had not been seen. Furthermore, this was the only exhibit tested on which we failed to obtain for at least some of the questions statistically reliable differences between those who saw and those who did not see the exhibit. Upon learning of these findings, the association sponsoring the exhibit decided to study the problem during the 1940 Fair. The conclusion stated above is substantiated by the fact that, for questions based on the material in the models, significant differences are obtained in the responses of those who have seen the exhibit as opposed to those who have not.

The Use of Even Common Professional Words May Be Misleading to the Public—Our study of the vocabulary used in legends indicates that even the most common professional words may be incomprehensible or unknown to the group intended to be reached. By selecting 50 words of varying difficulty from the legends of exhibits and asking classes of college students and a group of WPA clerical workers to define the terms, an unexpectedly high proportion of the terms were found to be completely misunderstood. For example, one-half of those responding had no idea

of the meaning of "nephritis" and an additional one-fourth had incorrect ideas about the term. It was thought by some to mean nervous disorder; by others, rheumatism; and by still others, blood disease. Similar results were found when the test words were "strabismus," "placenta," and "therapeutic." Public health workers, to whom these are everyday terms, may well beware of their use in exhibits designed for the general public.

Even Expertly Designed Exhibits May Impart Misinformation—In one exhibit there were a number of pictures of contrasts in the appearance of healthy and abnormal conditions in children. With one exception, the pictures showed white children. In the illustration having to do with rickets, however, the two contrasting pictures were both of Negro children. When the statement "Rickets is primarily a disease of Negro children" was scored by those who saw the exhibit, it was regarded as true almost twice as frequently as by those who had not seen the exhibit. The variation of more than one factor in a series of contrasts in this instance left a completely wrong impression.

Similarly, in the exhibit on Anemia, inadequate labeling was responsible for misinformation. In this instance, the misinformation was due to individual misinterpretations of unlabeled color transparencies. One particular color transparency pictures the foods that are rich in iron. However, since the individual foods were not labeled in the picture, persons tended to draw their own conclusions as to what specific foods were meant. Of the number of persons asked to name the foods in the exhibits, universal agreement was obtained for only three items. One particular picture, for example, was variously considered to represent apricots, new potatoes, plums, tomatoes,

FIGURE 3—First Year of Life Exhibit (Note the material in the trough below the shelf on which the models are shown)

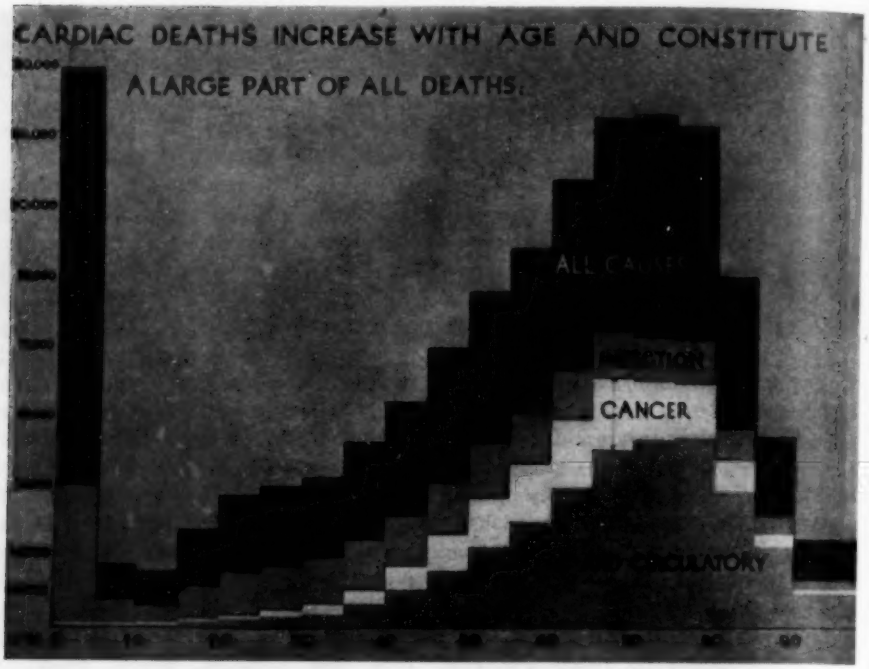

FIGURE 4—Heart and Blood Circulation Exhibit panel

and peaches. Another was thought to represent prunes, mushrooms, kidneys, or chicken livers. Incidentally, a similar situation has been observed in the Diabetes Exhibit in the San Francisco Fair. In this instance, the foods pictured as proper for a diabetic were not labeled, so that a number of spectators, being asked what meat was pictured, gave various answers, such as ham, pork, lamb chops, and steak.

Fifty-four individuals were asked which of the three groups of diseases shown in Figure 4, cardiac, cancer, and infection, causes the most deaths. All but four replied "infection." Although the chart is accurately drawn and does not indicate that infection causes more deaths than cardiac disease, it gives that impression to the casual spectator, and it is these wrong impressions that are learned rather than the truth.

Tests as an Educational Technic—In the course of our study, we more or less accidentally discovered what seems to be a valuable health education technic. It was carried out with 35,000 visitors at the 1939 New York Fair and has been repeated with double that number at the San Francisco Fair in 1940. Seven tests on health information were used to determine what the public knows about health. Visitors gladly took the tests but also demanded to know the correct answers. Accordingly, brief answers to all questions were prepared and each such answer gave not only the correct response but some explanation of the reason for it. Originally sent out to those who had requested them, the answers were later given to the visitors immediately after taking the tests. We have found that practically all who took the tests read the answers.

Additional interest in the technic is indicated by the volume of requests for additional copies for unions, schools,

Civilian Conservation Camps, and individuals who desire the tests to give to their friends. Although we have no direct evaluation of the effectiveness of the device in teaching health to the public, it does meet our first two criteria of attracting attention and sustaining interest, at least until the material is read.

A practical adaptation of the technic has been worked out for use in community groups by a few health educators. Questions based on the material which is to be taught are given to members of group meetings at the beginning of the meeting. During the meeting the major portion of the time is given over to discussion of the answers. This method has been found to arouse active interest in the material to be taught.

While it has been impossible in a brief paper to describe the many interesting and outstanding exhibits, an attempt has been made to caution against the hazards of presentation, as well as to indicate the need for experimental study of our educational efforts. In this attempt, emphasis has naturally been given to some of the minor limitations in exhibits so that the need for care in selecting material and organizing it may be stressed.

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CHARLES VALUE CHAPIN
1856–1941

ON January the thirty-first the life of this wise and good man came to an end. In his later years he lived quietly, and quietly he died. But, though he enjoyed his well earned retirement, such an unruffled life was in marked contrast to the years that had gone before. Seldom in public health work has there been a more active career; even less often has there been one as productive.

The record of Dr. Chapin's work, of his accomplishments, and of the honors conferred upon him constitutes a treasured page in public health history. Of particular interest to readers of the *Journal* is that he was President of the American Public Health Association in 1927, and the first recipient of the Sedgwick Medal, which was awarded him in 1929. Even more significant and more inspiring than a cataloging of events of this sort, however, is the example which he has set for others, particularly to public health administrators and epidemiologists. Entering these fields when the basis for action was tradition, when environmental hygiene held sway, and, in the spread of disease, fomites loomed larger than persons; and when it was the custom for health officers to buttress assumptions with ex-cathedra pronouncements, Dr. Chapin, had he not possessed a keen and inquiring mind and a serene courage, might have lived and died unnoticed as did most of his contemporaries. But he had such a mind, and was possessed of such a courage. Never a rebel, he nonetheless dared to test the validity of vested opinions in public health practice, and if he found them wrong he presented, in beautiful simplicity, the facts from which he had drawn his conclusions. Then, he corrected his own practice, and in due time other persons followed, so that today, particularly in the investigation and control of communicable diseases, applied epidemiology owes to him much of the exactness and productiveness of its procedures.

Many will best remember Dr. Chapin for his *Sources and Modes of Infection.* This volume has become a public health classic and deservedly so. Some will associate him with his published studies in sanitation, which early set a pattern for an analytical approach to public health administration. What most do not

know is that Dr. Chapin's annual reports of the health department of the City of Providence are documents of unique value. These reports show the mind of Chapin at work: scrupulous care in collection of information, painstaking tabulations and segregations of data, penetrating questions as to their meaning or lack of meaning, with conclusions reached only when it is evident that they must inevitably be reached. His utilization and interpretation of what most health officers consider uninspiring routine cumulative data is comparable in importance with Farr's analyses of the Registrar Generals' material. These reports we commend to all students of public health.

And so, though we have lost a great man, his influence will carry on. In memory he will be held as one in that great company which includes Sydenham, Hunter, Snow, Budd, Biggs, and Frost.

NATIONAL DEFENSE AND THE PUBLIC HEALTH

IN all-out preparedness there is general agreement that the armed forces are but the spearhead of a national defense; that the industry of the nation so preparing must be shaped and geared to provide the planes and tanks and guns and ships which the fighting services must have. A similar realistic approach is evidenced in the selective service act, in which it is recognized that while one man may best serve the national needs by handling a machine gun, another must be put to the making of that gun, a third to getting out the raw materials that go into it, and a number of others are essential for feeding and clothing the gunners and gun makers.

In spite of headlined charges about "bottlenecks," defense efforts and coördinations appear to be proceeding with an amazing speed and efficiency. Some overlapping, and gaps and errors of commission and omission are, of course, inevitable; and competitions between dramatic military demands and seemingly humdrum civilian necessities will continue to arise. The members of this Association are, naturally, seriously concerned with these matters as they relate to the public health. The basis of the problem is quite simple: though in the preparedness program the necessity for healthy troops and civilian population is recognized in the abstract, there has not been effective acceptance of the fact that the whole structure of defense depends upon the workers' ability to go to work tomorrow, and upon the soldiers' readiness to fall-in at command. Conversationally, national, state, and local authorities will concede the importance of health and would be amazed and indignant if an epidemic interrupted work in an industrial area or made ineffective a high proportion of troops in this training base or that. But the point is, not enough has been done to prevent such outbreaks. Consider, for example, the problem of malaria. In many instances, because of climate, camps have been placed in areas where that disease is endemic, where the Anopheles prevails. The infected mosquito does not recognize a government reservation, and, be the sanitary conditions of the camp itself ever so commendable, reasonably complete protection can come only if a civilian-occupied zone surrounding the military area is placed under proper sanitary supervision. This costs money, more perhaps than the local health department has in its entire budget, and malaria remains as a menace. Similar problems arise in other connections: venereal diseases, typhoid fever, dysentery, industrial diseases, etc. The Executive Board of this Association, meeting recently with its Committee on National

Defense, felt this situation to be sufficiently serious to justify release of the following statement to the press: "The Board and the Committee . . . view with increasing misgiving the fact that a complete no-man's-land is being created around new military and industrial areas which are not receiving adequate federal, state, or local health protection. This condition constitutes a major health hazard. . . ."

The board and committee, at the same meeting, touched upon another matter, thus: "Indiscriminate drafting of trained public health workers into military operations leaves the civilian population of the country inadequately provided with the public health protection and service which it must have." While the individual public health worker may be able to do little about obtaining funds for vast public health undertakings, the question of staying with or leaving a responsible position in health work is to some extent a matter of personal decision. Naturally, the glamor of strange places, of adventure and change beckon to the young and robust; the possibility of escape from what has become the dull routine of civilian life will appeal to the elders; and the satisfaction, not only of doing one's patriotic duty, but of getting public recognition of having done this in time of need, will strongly influence each person's decision. It is to be hoped, however, that the health officer, nurse, sanitarian, and others similarly employed will realize that the vast and complicated necessities of the present emergency cannot be met by impulse nor by the independent, uncoördinated and, to some extent, conflicting decisions of millions of different individuals. With this in mind, and until the whole problem of defense is in better perspective, the most truly patriotic act for each health worker would appear to be to continue to serve in that element of national defense for which he or she has been intensively trained: the maintenance of services for the direct protection of the health of the civilian population, thus rendering an important even if indirect aid to the whole needs of his or her country.

THE MERIT SYSTEM AND PUBLIC HEALTH WORK

NEARLY a third of a century of government under the Constitution seems to have passed before Congressmen and Senators and their respective administrations and parties became reasonably adept in using patronage as a means of furthering political survival. But having acquired expertness in this direction, they were not long in putting it to use, and with changes in party dominance, civilian employees of each previous federal administration were labelled as rascals, quite properly to be put out of office. Recognizing that not all the electorate would approve such a flagrant method of settling old scores and distributing benefits, national politicians coined two new expressions to justify this summary action, and, as is done today, attempted to pound them into the public consciousness. The first of these expressions carried the idea that to the victor belongs the spoils; the second, that any citizen in a democratic government is competent to discharge the duties of any office under that government.

If one may believe the records of the period of 1825–1880, the federal civil servant of that time was not an efficient person, nor did competence, if exhibited, have any bearing upon tenure of office. Appointees floated in on the flood of a particular political tide and encumbents drifted out with its ebb. In the meantime, the affairs of government suffered correspondingly and sometimes dramatically. Matters finally reached such a point that in 1883 there was enacted a civil

service law, designed to put an end to governmental incompetence and the existing abuses of patronage.

Now, because the establishment of a merit system is required for personnel serving in state health work contributed to from Social Security Funds, Titles V and VI, the extension of civil service benefits to health workers so employed and to health work so done is in the process of becoming a reality. This is greatly to be desired, and the Association has evidenced its interest in the matter by commissioning a subcommittee of the Committee on Professional Education to consider this problem in conference with a committee of the State and Territorial Health Officers.

The previous fine work of the Committee on Professional Education gives guarantee that this new assignment of theirs will be carried out more than creditably, and we hope that every reader of the *Journal* will give them the fullest measure of assistance in their endeavor to get facts and shape conclusions. Though the subcommittee, *per se,* will not carry any authority as to the kind of merit systems adopted in the several states, their influence will be exceedingly important, and because, in common with all human institutions, a professional staff built under ordinary civil service regulations has its liabilities as well as its assets, we urge that those administrators who have had experiences under civil service procedures give advice as to features that should be corrected as well as to basic necessities. Only in this way can there be developed a merit system fair to the worker and to the work to be done. For our own part, while recognizing the difficulty of evaluating the item of personality in an applicant, and while further recognizing that there is an opportunity for abuse when too much emphasis is placed on a quality so intangible as this, nevertheless we feel that there should be provision for a careful assay of both its positive and negative aspects in certification of eligibles. Again, the problem of age at retirement would seem to demand serious consideration: it is unfair both to the work and to the worker to expect an individual of sixty to continue to serve competently in certain aspects of field work, walking across fields in the country and climbing stairs in the city, day in and day out. Finally, we think it might be well to approach this whole problem of a merit system with a determination to give just as much protection to the work to be done as is given to the person who is to do the work.

In spite of recognized defects, not all of which can be prevented or removed, a merit system should do much in attracting competent persons to enter public health work. Properly organized and administered it will offer reasonable compensation and promotion, permanent tenure of office if competent, retirement provisions, and an opportunity to pursue an interesting and worth while career.

DR. STILES, DR. VINCENT, DR. ROSE

NEWS comes of the death of three distinguished scientists, each illustrious in a separate field of public health. Charles Wardell Stiles died on January 24 at the age of 73; George E. Vincent died February 1 at the age of 76; and Mary Swartz Rose died February 2 at the age of 66.

Dr. Rose's contribution to public health was in the field of nutrition, she having served with distinction for some thirty-five years as a member of the faculty of Teachers College, Columbia University. She was particularly interested in furthering the practical application of nutritional facts to everyday life. Of her numerous

publications, perhaps *Feeding the Family* is best known. This book had and still has a wide appeal to nutritionists who are faced with the serious problem of guiding others to make every dollar count in the food budget, and every food count in nutritional needs. Not only did Dr. Rose contribute to public health directly, but by sending out class after class of inspired students she made life better for countless thousands.

Dr. George Vincent brought his unusual abilities to bear on public health after a long record of accomplishment in the field of education. From 1917 to 1929 he was president of the Rockefeller Foundation and in this capacity had opportunities to exercise his diverse talents in the solution of health problems arising in the first world war. Thus he fostered research, teaching, and the application of new methods in military medicine. Public health perhaps has never had a more persuasive platform advocate than was Dr. Vincent, for he was gifted as a speaker. All who have heard him will remember the rapidity of his speech, the clearness of diction, the orderly presentation of subject matter, and the underlying subtle wit which he inevitably manifested. He possessed that rare gift of obtaining approbation from a not friendly audience even though he presented them with unwelcome truths. Though theoretically retired since 1929, Dr. Vincent lived an active and useful life in the last decade. He gave much of his time to Community Chests and Councils, to participation in committee work, and to lectures. Public health loses an inspiring leader in the death of Dr. Vincent.

Charles Wardell Stiles is better known to the older group of health workers than to the younger, for he had lived in retirement for the past few years. In the early part of the century he was a familiar figure and his was a recognized voice in the medical schools and the medical societies of this country and abroad. His demonstration of hookworm as a frequent cause of the anemia and chronic illness of southern rural folk came in 1902 as a dramatic shock to the physicians of that time. Directly and indirectly, much of the development of rural health work today rests upon his research and his wholehearted evangelism for hookworm control.

Dr. Stiles was primarily a zoölogist, having served in the Bureau of Animal Industry of the U. S. Department of Agriculture, and as Professor of Zoölogy in the U. S. Public Health Service. He was a professor in Georgetown University, and in great demand as a lecturer in other medical schools. He represented this country in many international congresses in his special field, and contributed extensively to zoölogical nomenclature. Though his activities and interests precipitated him into many arguments, he seemed always to enjoy them, and he led a full and exciting life, devoted to science. Because of his contributions in helminthology and rural sanitation his name will be inscribed in public health history as one who benefitted mankind by his life and work.

Credit Lines

A Selective Digest of Diversified Health Interests

D. B. Armstrong, M.D., and John Lentz, M.S.

POSTERS FOR A PITTANCE

Posters are too expensive to produce . . . we need posters, but we can't afford to buy them . . . we want up-to-the-minute posters on a variety of health subjects, but our budget limits us to the home-made type. . . .

So run the familiar comments which all boil down to this: everybody wants posters, but nobody seems able to pay for them. It is true that artistically satisfying posters are costly when produced in small quantities. So, for most of us, posters are a perennial problem.

Hygeia, the American Medical Association's health magazine, can help to solve the poster problem for any perplexed health educator. The editors of that magazine have devised a series of posters utilizing the excellent photographic illustrations that have appeared on the covers of past issues of *Hygeia.* The cover photographs have been printed on durable paper sheets measuring 11 inches by 14 inches. Arresting captions and brief, though pointed, text accompany the illustrations. The necessary color element is found in the lettering or in the form of decorative "color blocks." These posters are attractive and meet the required elements of timeliness, usefulness, and accuracy. But, most important of all, they are cheap. Three sets of 8 posters each are available—all for the cost of only 25 cents per set, postpaid. A great many of the important subjects that health educators wish to publicize are included in this series of posters. If you have not used any of *Hygeia's* health posters, we recommend them. They are the best answer we know to the question: Where can good, inexpensive health posters be secured?

PROCEEDINGS OF THE SEVENTH INSTITUTE ON PUBLIC HEALTH EDUCATION

"Health Education from A to Z" might be a good title for the bound volume that has been issued covering the transactions of the last Health Education Institute. Between the covers of this volume there is a plethora of information on practically all phases of our work. Since every page of this printed resumé of the Institute contains facts of interest and importance, it hardly seems fair to single out any features for special comment. Nevertheless, we wish to call attention to certain items such as the address of Dr. S. A. Courtis entitled "How to Lead Discussion Groups." This paper is worthy of study on the part of all health workers. The various bibliographies and lists of references included in this volume should be most useful to those who wish to do further reading on the subjects discussed. Then, there is a summary of Dr. Bruno Gebhard's exhibit tours which also contains many pointed observations that can be relied upon for guidance when one is confronted with exhibit construction. Finally, Miss Alma Haupt's discussion on "The Technique of the Personal Interview" should not be missed.

Copies of the transactions of the last Institute were mailed to all who attended the Detroit Meeting. We suggest that those who possess copies pass them on to others, for the written record of the 1940 Institute bristles with facts that can be used to advantage by all health department staffs.

THE N.T.A. EARLY DIAGNOSIS CAMPAIGN

"A *good X-ray* is your doctor's best aid in discovering *early* tuberculosis." This is the slogan of the Early Diagnosis Campaign to be undertaken by the National Tuberculosis Association in April—the 14th annual, non-fund-raising, nation-wide effort toward mass education regarding the early detection and proper care of tuberculosis. This campaign reflects one of the earliest concepts in tuberculosis epidemiology, phrased at the time of the Framingham tuberculosis experiment as follows—"The next step in the tuberculosis control program is the first step, namely, find the case."

This campaign is implemented by a number of freshly devised and effective pamphlets for lay consumption, under such arresting titles as Facts, Spots, Learn to Live, Step by Step, etc. We are advised that for the 1941 effort, the state and local tuberculosis associations have ordered over 7 million of these pamphlets for free distribution. Posters and other educational devices are also available for local tuberculosis associations free of charge. The new movement aimed at "The substantial eradication of tuberculosis by 1960," and the outstanding significance of preventable tuberculosis in our national defense program combine to make the 1941 Early Diagnosis Campaign worthy of the support of all interested in public health.

TO BE OR NOT TO BE—A DOCTOR

A deluge of books about doctors has drenched the literary field of late, but few of them have succeeded in picturing the physician in as well rounded a manner as does a little 87 page booklet issued by the Public Relations Bureau of the Medical Society of the State of New York. The title of this little volume is "What It Means to Be a Doctor," and its author is Dwight Anderson, a layman who has had long association with physicians. The booklet attempts to depict the doctor—his character, his education, his ability, his skill—for the benefit of the young student contemplating a medical career.

The text of the booklet was compiled from information which the author received in answer to a written questionnaire sent to 500 medical men in general practice and in specialized fields. A few sample phrases and certain observations from the book will convey some impression of its interesting and varied nature:

"Their (doctor's) most common characteristic is a friendly and well-poised disposition coupled with a well developed capacity for tolerance."

"Honesty, optimism, courage, flexibility, love of work with the acquisition of money a secondary consideration, the urge to inquire, 'horse sense,' moral and intellectual integrity, personality, and scholarship are necessary to the physician."

"Medicine is a service given by one person to another person; it will never be anything else. It is not a commodity."

"Good medical care is founded on confidence and free choice."

The whole of a doctor's career including his participation in professional societies, his work with lay educational groups, his internship, his financial status, and other elements that shape his career are set forth in "What It Means to Be a Doctor."

This booklet deserves wide reading, not only on the part of prospective medical students, but by everyone in-

terested in the future of the medical profession. Copies may be secured at a cost of 75 cents each by writing to the Medical Society of the State of New York, 292 Madison Avenue, New York, N. Y.

THE VANISHING POINT

An achievement in preventive medicine that deserves more than passing mention was announced recently by public health authorities of the City of Toronto, Canada. Reports for 1940 showed that not one case (we said *case*, not death!) of diphtheria had occurred in that city during the year! It is believed that this establishes a new world's record for diphtheria control in a city of Toronto's size. Credit for this amazing record was attributed to the annual toxoid campaigns which the city has carried out in coöperation with the Health League of Canada since 1929.

This remarkable demonstration by our Canadian colleagues will inspire many health workers here to push diphtheria further and further toward the vanishing point in communities throughout the United States.

BY WAY OF EVALUATION

Hygeia (January, 1941—Page 25) sets forth a list of questions that every health educator might ponder "yea long and sorely" as new printed materials, posters, radio programs, etc., are contemplated. Here are some of them:

1. Will this catch the interest of the public?
2. Will it reassure, rather than frighten?
3. Is it certain not to precipitate morbid, neurotic concern with disease?
4. Will it encourage reasonable optimism, justified by the results of treatment, without obscuring the essential seriousness of the problem?
5. Will it tend to replace fear and ignorance with an attitude of alertness and courageous intelligence?
6. Will it build confidence in the family physician?

By way of evaluation, why not measure some of your efforts by these questions? Any health education material that passes the test of these queries is certainly fulfilling a vital purpose.

MAGAZINE ARTICLES

Current popular magazine articles on health or of medical import:

"The Mystery of Aging." George W. Gray. *Harpers Magazine*. February, 1941.

"Are You Walking Around With a Nervous Breakdown?" Margaret Case Harriman. *Ladies' Home Journal*. February, 1941.

"The Interne." No Author Given. *Life*. January 20, 1941.

"Medical Miracles of the Year." Waldemar Kaempffert. *Look*. January 28, 1941.

"The Case of the Missing Mosquitoes, et al." Edward M. Brecker. *Scribner's Commentator*. February, 1941.

"Eating Their Way to Health and Learning." J. D. Ratcliff. *The Kiwanis Magazine*. February, 1941.

"A Long Life and a Healthy One." Bruce Bliven. *The New Republic*. January 13, 1941.

"Strep Throat." Maxine Davis. *Good Housekeeping*. February, 1941.

"Modern Miracle Women." Maxine Davis. *Cosmopolitan Magazine*. March, 1941.

"Fighting the Flu." Mona Gardner. *Atlantic Monthly*. February, 1941.

(The above is not presented as a complete list and the articles cited are not necessarily recommended.)

A MEDICAL SCHOOL IN HEALTH EDUCATION

It comes as good news to learn that the University of Buffalo (N. Y.) School of Medicine has inaugurated a health education project designed for the citizenry of Buffalo and Western New York. This project embraces a series of lectures designed to acquaint the average man and woman with medicine's newest developments in preventing and treating disease. The lectures, given by leading medical men, are heard on alternate Sunday afternoons in the medical school's amphitheater. Lecture subjects announced are: "What You Should Know about Syphilis," "Carcinoma in Women," "Appendicitis—How to Suspect It and What to Do about It," and "Your Food and Your Health."

Public interest in this project was demonstrated when a packed auditorium greeted the first lecture.

An enterprise such as this is further proof that medical schools can play a most important rôle in community health education. It is to be hoped that other institutions will follow the example set by the University of Buffalo, and certain other schools.

NO PLACE LIKE A HEALTHFUL HOME

The U. S. Public Health Service has compiled a list of essentials that are necessary to a healthful home environment. They are as follows:

1. A pure and sufficient water supply
2. A safe milk and food supply
3. Sanitary refuse and sewage disposal
4. Sufficient ventilation, heat, and light
5. Space enough for ordinary family demands
6. Absence of excessive dampness
7. Screening against flies and mosquitoes
8. Protection against other insects and rodents
9. Protection against fire hazards and other accident risks
10. Adequate play space and sunshine for children

Sanitarians and health educators have long advocated these essentials to healthful living. Many of these factors are now firmly grounded in the public consciousness, while others are still matters of casual concern or indifference.

A group of psychologists has suggested that an additional item be added to this list. They maintain that every household needs at least one member who is given to singing, as singing, when competently done, creates that cheerfulness necessary to a healthful home environment!

MISCELLANEOUS COMMENTS

The job of the student health director has been well described by Wilbur H. York, M.D., Chairman of the Department of Health and Physical Education of Princeton University. As expressed by Dr. York, the student health director must "create in the mind of the student an attitude toward health that will make it possible for him to study his own requirements as to rest, diet, and his disease tendencies without developing in him an abnormal health consciousness and a habit of introspection. To do this requires insight and sympathetic understanding of the many problems of youth."

Bioclimatology is the name of a new course offered by Pennsylvania State College. It deals with the effect of climate on life and is believed to be the first course of its kind taught in this country, with the possible exception of the work of Huntington at Yale, or Mills at Cincinnati. The problem of proper location of health resorts and tuberculosis sanatoria, as well as the significant effects of climate on health, will be studied in this course.

A correspondent asks us to select from the list of recent semi-scientific books two that we consider among those outstanding for purchase for a popular health library. We unhesitatingly recommend *Americans Live Longer*, by W. W. Bauer, M.D. (Published by

Bobbs Merrill Company), and *Germs and the Man,* by Justina Hill, M.D. (Published by G. P. Putnam's Sons).

The Michigan Tuberculosis Association and Affiliated Societies have issued an extremely clever folder entitled "It's a Cold World." Here one finds "Cold Facts about Colds"—what to do to keep from getting colds and what to do if you should catch one. The illustrations—all of which pertain to "cold weather"—are cleverly executed and tie in neatly with the text. This folder is an excellent example of how an inexpensive item can be made as effective and interesting as a more elaborate publication. It's all in knowing how!

The U. S. Public Health Service has furnished health workers with many valuable venereal disease publications dealing with syphilis and gonorrhea from almost every conceivable angle. The Service's latest publication entitled "Venereal Disease and National Defense" is another thoroughly useful and timely piece of literature. In this folder syphilis and gonorrhea are presented as "home front" problems which should challenge every town in America. The folder is executed along modern lines as regards typography and layout, and reflects considerable ability. The text is full of vital information that should bestir much thought and action on the part of those who read it.

The Ohio Department of Health has distributed an exceedingly amusing publication on home safety entitled "It's Papa Who Pays." Written in humorous verse form and illustrated with drawings reminiscent of the comic papers, this is a publication that must be seen and read to be appreciated. Accident situations of all types are encountered by poor Papa who comes home late from his lodge. The various situations are treated in a manner that borders on the old time slapstick comedy methods. The publication is downright funny, and at the same time puts over some important home safety information. The use of humor in health education is well exemplified in "It's Papa Who Pays."

The motion picture industry has swung into action to do its part in the nation's defense program. John Ford, one of Hollywood's top directors, has completed a 2,000 foot short subject called "Sex Hygiene." This film will be used for teaching purposes in Army Camps. Twentieth Century-Fox contributed its facilities and leading technicians likewise volunteered their services in making this film. The cast consists of professional actors in the speaking parts, assisted by army personnel. Medical advisers from the army supervised the technical aspects of the film. A second production entitled "Personal Hygiene" is to be produced in the near future. During 1941, Hollywood plans to contribute eight other shorts to the defense program. None of these films will be shown in theaters, as they are designed only for exhibition in army training camps.

BOOKS AND REPORTS

L. Emmett Holt: Pioneer of a Children's Century—*By R. L. Duffus and L. Emmett Holt, Jr. Foreword by E. A. Park. New York: Appleton-Century,* 1940. 295 pp. Price, $3.00.

Those interested in the history of child health in America have long waited for a biography of Dr. Holt for they have recognized the unique rôle which he played in the development of that movement. As a pediatrician and teacher he has long been acclaimed, but his contributions to public health and child welfare and his assistance in fostering the development of scientific medicine have been less well understood. And the story of his life indicates why this is so. He gave the world no outstanding scientific discovery, and he served in no large public health office. But careful analysis shows that his popular little book *The Care and Feeding of Infants* (growing out of a 4 page pamphlet issued for nursemaids) led to a widespread dissemination of the best information about child care; that his text, *The Diseases of Infancy and Childhood,* kept practitioners currently informed of the latest and best in pediatrics; and that his great interest in preventive pediatrics assisted in the acceptances of the use of diphtheria antitoxin, of clean milk, and of the continuous health supervision of infants and children.

Later as president of the Child Health Organization he fostered the coöperation of educators, advertisers, school teachers, popular magazine executives, and parents, in bringing the best knowledge of child hygiene to both children and their parents in popular fashion.

All of these are significant factors in the development of public health as we know it today. Even in his final presidential address at the American Pediatric Society (of which he was a founder and twice elected president), he raised a pertinent and unsolved problem —how to cement the practitioner, the health expert, and the laboratory experimenter into a functioning unit, and how to keep each in touch with the other.

In 1919, Dr. Holt performed one additional service to the public health field in acting as secretary to the Cannes Conference of Red Cross organizations of different nations, a conference that contributed to the formation of the Health Organisation of the League of Nations and the Junior Red Cross. Dr. Holt also assisted in interesting Mr. Rockefeller in founding the Rockefeller Institute for Medical Research, and served as secretary of its board for years. Here and in his own Babies' Hospital he was able to foster many studies of scientific importance, even if his own work in the laboratory was limited.

The biography itself is simply written by his son and a well known newspaper writer and they have made extensive use of Dr. Holt's letters to and from his own family to tell the story. This reviewer wishes more letters to his professional associates might have been included for they might seem, from the few examples given, to have thrown other lights on his character and accomplishments.

A picture of the development of pediatrics in America was inevitable when Holt's life was written, but that one of the authors of this volume is an important pediatrician as well as Dr.

Holt's son has been unusually fortunate for the reader, and the resulting picture of pediatric practice from 1878 to 1923 will benefit those who are less interested in the intensely human story which is told. Pediatricians will also be interested in the excellent foreword from the pen of Dr. E. A. Park, Professor of Pediatrics at the Johns Hopkins University. LEONA BAUMGARTNER

Methods of Analysis, Official and Tentative, of the Association of Official Agricultural Chemists—*(5th ed.) Washington (P. O. Box 540): Association of Official Agricultural Chemists,* 1940. 757 pp. Price, $5.00.

The fifth edition of this well known compilation of methods marks another triumphal milestone by bringing up to date the standardization of analytical chemical procedures for the examination of agricultural and related articles of commerce. The publication is unique in that it is not the compilation by one author of selected methods but is the result of a well organized plan for collaborative research work to prepare methods of such accuracy that analytical results obtained thereby will be recognized in court testimony. The name of the book does not reveal that the methods deal predominantly with foods or that 80 pages are devoted to methods for the analysis of drugs. Workers in the fields of food and nutrition are fully aware of our immediate and daily dependence upon the food producer, packer, and distributor for quality foods. They know, too, of the active though inconspicuous part played by the methods of analysis observed by the Association of Official Agricultural Chemists in protecting the consumer's health and his purse. What these methods bring to light not only prevents the sale of dangerous and partially decomposed foods and drugs, but prevents also the sale of foods and drugs of inferior or deceptive quality, or puts into effect the requirement that they must carry a conspicuous label to indicate such facts when they are offered for sale.

Four new subjects are included in this edition: Fish and Marine Products; Microchemical Methods; Vitamins; and Microbiological Methods. The last two of these sections will interest the nutritionists and sanitarians respectively. Improved and new methods are described for the determination of filth and decomposition in foods. The section on microbiological methods outlines procedures for the examination of frozen eggs and canned vegetables and for the estimation of the numbers of thermophilic bacteria in sugar. A. H. ROBERTSON

Report of the Sex Question—*By The Swedish Population Commission, Stockholm, 1936. Translated and edited by Virginia Clay Hamilton, M.D. Foreword by Warren G. Thompson. Published for the National Committee on Maternal Health, Inc. Baltimore: Williams & Wilkins,* 1940. 182 pp. Price, $2.00.

Public health workers in this country have generally looked upon voluntary factors in birth rates as purely private matters. We thus ignore as irrelevant induced abortions, irresponsible sexual promiscuity or commercial prostitution, and certain emotional and mental aspects of adjustment. In this report the Swedish Commission discusses the "ethical principles involved in contraception," but makes clear the bearing of the issue on social and personal hygiene.

The commission notes that even for the "absolutists" contraception has already been legitimized not alone with respect to the life and health of the mother, or to the health of prospective children, but also with respect to reliance upon "safe periods." To the objection that contraceptive practices

make sex activities conscious and "rational," the commission replies that the monogamic ideal is itself an attempt to rationalize and regularize sex, and making procreation and parenthood voluntary rather than casual and accidental is in harmony with the ethical principle of responsibility as well as with the cultural demand for control of sex impulses.

In a democratic society we cannot meet the danger of extreme birth restriction to the national life by inducing people to beget children they do not want, nor by disregarding the deeper needs of the personalities involved. The commission recommends an interrelated program of (a) social reforms for economic security and living conditions that are essential for the kind of home and family life we consider desirable; and (b) educational and cultural efforts that would make the desire for children and satisfaction with children integral parts of life's aspirations. The section on "sexual enlightenment" assumes a broad scheme of education for parenthood and for more direct attention to the needs of youth.

BENJAMIN C. GRUENBERG

A Research Conference on the Cause and Prevention of Dental Caries, 1938—*Chicago: The Good Teeth Council for Children,* 1940. 178 pp. Price, $2.00.

This highly technical discussion will probably be of greater interest and value to public health bacteriologists, chemists, and dentists than to the general public or even to those engaged in the more administrative aspects of public health activities.

The reports as a whole indicate that there was not a unanimity of opinion among the Conference participants as to the cause of dental caries, even while particular credence seems given to the belief that carbohydrate consumption is a causative factor. These, however, are not the most important inferences to be derived from a study of the papers making up this volume. More important is the encouraging impression one gains in reading the book that honest, scientific, worth while efforts are being applied to the solution of the problem of dental caries, and that, given time and proper financing, there is every reason to believe the problem can and will be solved.

The high caliber of the participants in their respective fields is such that the book should attract the attention of all those interested in this phase of public health.

RICHARD C. LEONARD

The Streptococci—Their Descriptions, Classification and Distribution, with Special Reference to Those in Milk—*By William D. Frost, Ph.D., Dr. P.H., and Mildred A. Engelbrecht, Ph.D. Madison, Wis.: Willdof Book Co.,* 1940. 172 pp. Price, $4.25.

Everyone who is interested in milk streptococci and their relationship to public health will want to read this book. A vast amount of data is given on the occurrence of streptococci in the cow's udder in health and disease, with interpretations of their significance to human health. The chapter on the historical development of our knowledge of the streptococci in milk brings interesting facts together in a scholarly discourse. Methods used for the isolation and study of streptococci are described in detail.

The investigations on which the treatise is based were undertaken and carried out for the practical purpose of keeping a raw milk supply produced on several large farms free from streptococci capable of causing disease in man. The studies, which included the streptococcal flora in the throats of dairy employees, extended over a period of more than a decade. The authors were especially concerned with *Streptococcus epidemicus* Davis, which causes septic sore throat in man.

During the years when these studies

were in progress various investigators published data which made it possible to distinguish hemolytic streptococci capable of infecting man from those capable of infecting only the lower animals. The distinctions may now be made on the basis of precipitin reactions, fermentation of trehalose and sorbitol, and sensitivity to bacteriophage. The authors frankly admit that during the early years of their studies they regarded as *Streptococcus epidemicus* strains which they now know were of bovine origin. They have given an appropriate name to the animal streptococcus which caused the confusion—*Streptococcus zoöepidemicus*. This specific name should be accepted to replace the designation "animal pyogenes" which is commonly used.

Another species name introduced by the authors is appropriate and fills a need in streptococcal nomenclature. After Holman's classification all streptococci which failed to ferment lactose were often carelessly designated *S. equi;* or they were designated *S. pyogenes B* 1, a name which does not fulfil the rules of nomenclature. The authors give the specific name *S. equisimilis* to the group which resembles *S. equi* in inability to ferment lactose, but otherwise differs from *S. equi.* They do not state definitely whether this name is to be applied to streptococci of Group A or Group C (there are strains of both groups which fail to ferment lactose); but their statement that "pyogenes B" is a synonym indicates that the name *S. equisimilis* should be applied to the strains of Group C, because "pyogenes B" is a name which was given to strains of animal origin.

In the chapter on descriptions of beta hemolytic streptococci the authors fail to clarify the confusion which was introduced into the nomenclature of streptococci when Rosenbach designated as *S. erysipelatis* the streptococcus which Fehleisen found to be associated with erysipelas, and when Klein designated as *S. scarlatinae* the streptococcus associated with scarlet fever. In the days of those early bacteriologists when the characters now used for the differentiation of streptococci were unknown, it was excusable to regard disease source as a distinguishing character. But it is now generally recognized by those who have studied streptococcus types in connection with the epidemiology of human streptococcal diseases, that a single species, or even a single agglutinative type may cause a variety of diseases, including erysipelas and scarlet fever. Obviously, then, any classification of streptococci based primarily on disease source is invalid.

There appears to be confusion also in regard to the species *S. infrequens.* Its description as a fermenter of sorbitol is irreconcilable with the statement of Holman, who first described the species, that he obtained it from many human disease sources. (Strains from human disease sources do not ferment sorbitol.)

The statement that Schwartzman and others found a specific bacteriophage for a group of organisms with the fermentation reactions of *S. pyogenes* is incorrect. The group of organisms which Schwartzman found to be sensitive to his phage has the fermentation characteristics of *S. subacidus,* as described by Frost and Engelbrecht. To this group the name *S. erysipelatis* has been applied in some of the literature of the last 15 years. All of this confusion emphasizes the need for a thorough investigation of streptococcus problems.

ALICE C. EVANS

Wonder Stories of the Human Machine—*By George A. Skinner. Ten pamphlets reprinted from Hygeia. Chicago: American Medical Association,* 1939. Price, $1.00 for set (15¢ each).

This is a description of the human body and is divided into 10 separate

pamphlets of less than 20 pages each; a light box file is supplied to hold the pamphlets. Each deals with one or more aspects of anatomy and physiology. Number one is entitled The Framework (Bones); number two, The Running Gear (Muscles), and so on. At the end of each pamphlet are 12 questions concerning the subject matter discussed in the text.

As might be anticipated from their authorship, these stories are clearly and authoritatively written. They ought to be of great use to teachers of hygiene.

MERRILL E. CHAMPION

Graduate Medical Education — *Report of the Commission on Graduate Medical Education. Chicago: University of Chicago Press,* 1940. 304 pp. Distributed Free by the Commission on Graduate Medical Education.

This book presents the report of a distinguished commission consisting of leaders in the field of medical education, the various phases of medical practice, and the field of hospital administration. The opening chapter contains a summary of the entire report which is a departure from the more usual procedure of summing up at the end of a presentation. This method serves to clarify the subject in the reader's mind right at the beginning.

The committee discusses graduate medical education under three major headings: the internship, the residency, and postgraduate medical education. Objectives and standards are set forth for each of these classifications.

The internship should be considered as part of the basic preparation of the student for general practice; in addition it should provide him with the foundation on which he can, by graduate training, develop proficiency in a specialty. The committee recommends a "General Internship" of the rotating type, with time devoted to general medicine, pediatrics, obstetrics, surgical diagnosis, minor surgery, and first aid and emergencies. A period of 12 months is thought to be most generally applicable. The educational aspects of the service are to be stressed, and tasks which do not produce educational results sufficient to justify the time and effort expended should be lifted from the intern's shoulders. Thus "ambulance riding" should be eliminated, and the anesthesia service for interns should be dispensed with. In addition it is recommended that laboratory work be done only in connection with patients actually followed by the intern.

This recommendation of a rotating internship differs from the policy followed by many of our leading hospitals particularly in the large eastern educational centers where straight medical or surgical internships have long been the vogue.

The residency, according to the commission, should be designed to enable a physician to make himself proficient in a specialty and to give him the educational background for continued development in this field. A period of 3 years with part of this time spent in the basic sciences is recommended. The work of the Advisory Board for Medical Specialties is explained.

Postgraduate medical education, the committee states, is designed to keep a man abreast of his own field, but not to qualify him to enter a new type of special practice. There are two types of postgraduate medical education—(a) for the general practitioner, and (b) for the specialist. Recommendations are made for each type.

There is also a chapter outlining the status of postgraduate medical education in Great Britain. The book closes with appendices giving various types of statistics concerning internships and residencies, and a section showing some existing plans of postgraduate education.

The United States is at present on the verge of a new era in graduate medi-

cal education, and this study serves a valuable purpose in collecting data on the systems in use in various parts of the country, and in charting a course for the future. CHARLES F. WILINSKY

Emotion and Conduct in Adolescence—*By Caroline B. Zachry. New York: Appleton-Century,* 1940. 563 pp. Price, $3.00.

The fundamental thesis, as developed in this excellent text, is that if the school is to fulfil its function in understanding and meeting the needs of students in their social relationships and development, it must enlist instructors who, in addition to having an interest in the personality of the student, have an insight into their own. Such an instructor will realize his own limitations and will appreciate the importance of the conference method where teacher, school doctor, nurse, psychiatrist or other specialist, pool their observations and judgments. Such an instructor will realize, too, the value of cumulative records as to health, physical, intellectual, and emotional growth and development, and social adjustment; but at the same time he will realize that the best record does not take the place of personal responsiveness, the chemical reaction of one to another. The author points out that such an instructor, with interest in assisting in the social development of the adolescent, will refrain from too much "digging" and will often be content to watch and wait. He will realize the interrelationship of physical and psychological factors in the maturing of the student.

Emphasis is placed on the teacher's realization of sex differentiation in the concepts and behavior of adolescents. The adolescent's concern with his changing body must be recognized, and the objectivity of his attitude to such changes promoted through courses in hygiene and biology as part of the general curriculum. The section on sex education is refreshing in its common sense approach. The author points out that the attitude of the teacher in this field is just as important as the facts taught, that "no teacher should proceed further than he can comfortably go" and that the school should not urge instruction on this topic by those who are "unready or overeager."

The adolescent, in his attitude to changing persons and relationships, experiences a conflict between the desire for affection and security, on the one hand, and for emancipation and freedom, on the other. The wise counsellor will steer between the Scylla of paternalism and the Charybdis of emotionally sterile objectivity.

The attitudes of the adolescent to basic social institutions such as choosing a vocation, citizenship, and marriage are outlined with pertinent case histories. Particularly illuminating are the author's observations on the relationship of unemployment to the adolescent's development. The goal of adolescent education is defined as the utilization of experience in achieving social maturity.

Grateful readers of this volume will welcome further observations from Dr. Zachry and her associates as to the means of finding and training teachers adequate to meet the needs of adolescent education. ALBERT MCCOWN

Fundamentals of Bacteriology—*By Martin Frobisher, Jr. (2nd ed.) Philadelphia: Saunders,* 1940. 653 pp. Price, $4.00.

This is a second edition which very considerably revises, improves, and brings up to date a textbook that has been in print only 3 years. The choice of the word "Fundamentals" in the title is a happy one for it is descriptive of the character of the book; the title "Microbiology" would have been more apt than "Bacteriology" for the reason that this 650 page, attractively and sturdily bound, unusually well printed

and proof-read volume deals broadly and without specialization with the fundaments of the biology that may be seen under the microscope.

The author has so well succeeded in presenting his thesis that " from a cultural and philosophical standpoint, a view of bacteria not exclusively as parasites but as microscopic plants having the most interesting and valuable synthetic and analytic powers, not only increases one's general usefulness, but greatly broadens his view of life and sharpens his appreciation of the subtlety of nature," the student using this text will have concisely, thoroughly, philosophically, and interestingly placed before him the essential facts about microorganisms and their environmental relationships in a way to give him either sound cultural training or a solid foundation upon which to specialize.

The 326 illustrations—most of which really enhance the text—have been appropriated from every available source, credit carefully given, and thought has been taken to make the accompanying titles informative. The table of contents and the index are surprisingly complete.

The presentation is unusual but very logical; the diction occasionally a little archaic but the statements seldom ambiguous. Undue stress has not been laid upon the medical, the agricultural, or the industrial aspects of microbiology. In the historical introduction the author has selected well, and proper attention has been given to morphology and structure, to nutrition and metabolism, and to staining and sterilization operations. The promise to use one system of nomenclature—*Bergey's Manual*, 5th ed.—has been adhered to more closely than is often the case. Heading many chapters with interesting designations like " The ' Little Bacteria,' " " The Spiral, Flexible Bacteria " (followed each time by the name of the Order), lends a charm to the book and should stimulate the reader's interest in the contents; in addition, each of these chapters is headed by an outline of the systematic relationships. While the immunological phases may be stressed less than is customary, this is not the usual lopsided medical approach. Ultramicroscopic viruses are treated succinctly but well. In an interesting chapter on " Bacterial Associations " bacterial synergism is especially well presented following the observation—rather characteristic of the author's style—that in theology synergism signifies " the combined action of the human being and the divine grace in the salvation of the soul." The student who masters this text has been appropriately introduced to microbiology. FRIEND LEE MICKLE

Elementary Bacteriology: History, Fundamentals, Pathogenic and Non-pathogenic — *By Joseph E. Greaves and Ethelyn O. Greaves (4th ed.) Philadelphia: Saunders,* 1940. 587 pp. Price, $3.50.

This fourth edition of an elementary textbook of bacteriology contains some new material with a few new illustrations. Several chapters have been rewritten and some of them expanded; a chapter on " Syphilis," a classification chart of the Class Schizomycetes, and other material have been added.

This book is rather more pretentious than many elementary textbooks, and it covers medical, public health, agricultural, and industrial aspects of bacteriology rather thoroughly, even with a wealth of detail that must be bewildering to many students. One wonders how a textbook reaches a fourth edition without a weeding out of the extraneous details that would not be out of place in a teacher's lecture notes but which continually tend to distract the reader's interest.

The volume is rather well illustrated. At the end of each chapter appears a list of questions that rather pertinently

emphasize the points that have been developed.

While the subject matter presented is adequate for a college course of bacteriology, the style of presentation seems adapted to persons of high school age. One example taken at random from many similar statements that abound throughout the book should suffice to illustrate a style of writing that greatly annoys your reviewer. In the chapter on "Immunity," in a description of what happens when immunological defenses fail to stop infection, we read "Something happens—we call it death —and the micro-organisms quickly enter all the tissues. If it is a friend who is thus attacked and we are far distant, we have to hurry to obtain a last fond look before the wrecking crew tears the body to pieces."

This book is attractively bound and well printed, and it contains much good, strong bacteriology; however, the arrangement of material could be improved and a pruning out of unnecessary detail, together with the free use of an editor's pencil, should improve the context and make the book more useful to students. FRIEND LEE MICKLE

BOOKS RECEIVED

TEXTBOOK FOR MALE PRACTICAL NURSES. Gayle Coltman. New York: Macmillan, 1941. 215 pp. Price, $2.00.

SOCIAL AND ECONOMIC ASPECTS OF SWEDISH POPULATION MOVEMENTS, 1750–1933. By Dorothy Swane Thomas. New York: Macmillan, 1941. 487 pp. Price, $6.00.

A TEXTBOOK OF CLINICAL PATHOLOGY. Edited by Roy R. Kracke & Francis P. Parker. 2d ed. Baltimore: Williams & Wilkins, 1940. 780 pp. Price, $6.00.

FUNDAMENTALS OF ADMINISTRATION FOR SCHOOLS OF NURSING. New York: National League of Nursing Education, 1940. 270 pp. Price, $2.50.

IN A MINOR KEY. NEGRO YOUTH IN STORY AND FACT. By Ira DeA. Reid. Washington: American Council on Education, 1940. 134 pp. Price, $1.25.

FEEDING OUR OLD FASHIONED CHILDREN. By C. Anderson Aldrich and Mary M. Aldrich. New York: Macmillan, 1941. 112 pp. Price, $1.75.

PLUMBING AND PUBLIC HEALTH. By Arthur B. Cronkright and Arthur P. Miller. Washington: Government Printing Office, 1940. 118 pp. Price, $.30.

GUIDE TO LIBRARY FACILITIES FOR NATIONAL DEFENSE. Preliminary Edition. Edited by Carl L. Cannon. Chicago: American Library Association, 1940. 235 pp. Price, $1.25.

COFFEE: A COLLECTION OF MEDICAL ABSTRACTS. By Milton M. Bridges. New York: Pan-American Coffee Bureau, 1940. 64 pp.

T. N. T. POISONING (TRINITROTOLUENE): INFORMATION FOR EMPLOYERS AND EMPLOYEES. Ottawa, Canada: Department of Pensions and National Health, 1940. 8 pp.

FOODS AND NUTRITION. By Fern Silver. New York: Appleton-Century Co., 1941. 522 pp. Price, $1.72.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Persistence of Diphtheria Immunity—About a seventh of the children treated with 3 doses of toxoid were found Schick positive 5 to 11 years afterward. It is suggested that all children immunized in infancy be given another injection at school entrance age if a Schick test is not done at that time.

BENJAMIN, B., *et al.* Results of Schick Test in Children One to Ten Years after Injections of Toxoid. Am. J. Dis. Child. 60, 6:1304 (Dec.), 1940.

Wartime Immunization Practice—In this series of lectures, immunizations against the bacterial infections of typhoid, cholera, and plague; against the toxins of tetanus and diphtheria; and against the virus and rickettsial diseases, smallpox, rabies, yellow fever, typhus fever, and trench fever, are all discussed from the standpoint of British military experience.

BENSTED, H. J. Modern Practice in Wartime—Immunization of Soldiers and Civilians. J. Roy. Inst. Pub. Health & Hyg. 4, 1:7 (Jan.), 1941.

Harking Back to 1918—Experience is a valuable teacher. In anticipating the job of rehabilitating the registrants disqualified under the 1940 Conscription Act, the findings of the "second million" drafted in 1918 provide a useful basis for assumptions. Here you can read an excellent summary of those findings.

BRITTEN, R. H., and PERROTT, G. ST. J. Summary of Physical Findings of Men Drafted in the World War. Pub. Health Rep. 56, 2:41 (Jan. 10), 1941.

Syphilis Contacts—Case finding methods produce results when intelligently applied. An average of two names of contacts per case were obtained and three-fourths of the contacts of early syphilis cases had syphilis. About one new case from each early case can be found, and that is surely worth while.

CLARK, E. G. Studies in the Epidemiology of Syphilis. V. D. Inform. 21, 11:349 (Nov.), 1940.

Venereal Patients Are Human—Many papers have been written about the treatment of syphilis, but we hear much less about the human beings who are the victims. So this brief note on the social implications of the disease comes as a wholesome reminder that the person is as important as the case as a unit in our nation-wide administrative project to stamp out syphilis.

COOK, J. Special Problems Caused by Syphilis. (New Jersey) Pub. Health News. 24, 6:181 (Dec.), 1940.

A Gonococcus Filtrate Skin Test—To aid in the diagnosis of gonorrhea and as a criterion of cure, a skin test is added to the smear, culture, and complement-fixation reaction. The authors hold it to be more valuable than the other three except when sulfanilamide has been employed.

CORBUS, B. C., and CORBUS, B. C., JR. The Cutaneous Diagnosis of Gonococcic Infections. J.A.M.A. 116, 2:113 (Jan. 11), 1941.

Aid for Mass TB. Testing—A good word is said for fluorography with the 35mm. film and portable equipment

which is now commercially available. Though there are adjustments which require expert judgment in making the pictures, and special experience is needed in reading small films, the method can be employed where no other could be used.

DEARING, W. P., and TURNER, A. E. Chest Fluorography with Portable X-ray Equipment on 35mm. Film. Pub. Health Rep. 55, 52:2369 (Dec. 27), 1940.

More than Art of Medicine Needed—Part II of this inquiry into the training of health personnel uncovers the lack of adequate preliminary training which exists among many of the employed medical health officials. The rapid expansion of health services has accented the need for either intensive graduate courses or the expansion of in-service training.

DERRYBERRY, M., and CASWELL, G. Qualifications of Professional Public Health Personnel. Pub. Health Rep. 55, 52:2377 (Dec. 27), 1940.

The Eighteen Per Cent Who Are Chronically Sick—After 40 is reached persons with chronic disease, though only a small group numerically, are responsible for the lion's share of sickness, disability, and mortality. How to lessen this burden of the ambulatory person with chronic disease is a problem with which public health leaders must struggle.

DOWNES, J. Chronic Disease among Middle and Old-age Persons. Milbank Quart. 19, 1:5 (Jan.), 1941.

V. D. and Defense—The greatest single health problem today is syphilis and the most troublesome social problem is prostitution. So says the chief of the Navy's division of preventive medicine. Gonorrhea is the army's principal problem, for 4.5 per 1,000 men are absent from duty constantly because of the disease. There is no disagreement about the most troublesome social problem. What communities should do is the subject of this important symposium.

DUNHAM, G. C., *et al.* Social Hygiene and National Defense. J. Social Hyg. 26, 9:393 (Dec.), 1940. (Note: the January, 1941, issue, 27, 1 is devoted to an extension of this subject and should be read in connection therewith.)

More about Dental Caries—It appears that the incidence of caries is affected by the amount of sunshine the child gets. Health workers are urged to give thought to vitamin D when concerned about dental caries.

EAST, B. R., and KAISER, H. Relation of Dental Caries in Rural Children to Sex, Age, and Environment. Am. J. Dis. Child. 60, 6:1289 (Dec.), 1940.

Laboratory Aids to the Diagnosis of Flu—A promising aid to the epidemiologic study of influenza is the complement-fixation test which gives dependable information in most cases 10 to 14 days after onset.

EATON, M. D., and RICKARD, E. R. Application of the Complement-Fixation Test to the Study of Epidemic Influenza. Am. J. Hyg. 33, 1:23 (Jan.), 1941.

Influencing Adult Behavior—As public health education is essentially adult education, and as much of public health administration is educative, then a great many sanitarians should be interested in what is going on in the minds of the adult educators. You'll find much of interest in this abridged report of their annual meeting.

ELLIS, A. C., *et al.* Agencies for Adult Education (and) ADAMIC, L., *et al.* Specialized Programs of Adult Education. J. Adult Ed. 12, 4 (Part 2) :461 (Oct.), 1940.

Some Questions for the School Nurse—School nursing service as a part of a generalized public health nursing program is analyzed principally by means of a series of questions about nursing procedures, attitudes, and records. Public health nurses must be

made always more aware of opportunities for effective teaching during their contacts with pupils, parents, and teachers.

FULLER, A. Public Health Nursing Service for the School Child. Trained Nurse & Hosp. Rev. 105, 6:451 (Dec.), 1940.

Progress Report—Nineteen months' experience with the New Jersey prenatal blood test law indicates that the provisions are being carried out successfully; there is a definite tendency toward earlier tests; an increasing number of positive women are getting treatment; fewer cases in babies and children are being reported. Another encouraging sign is the increasing interest and cooperation of practising physicians.

HALL, J. Prenatal Blood Tests for Syphilis. (New Jersey) Pub. Health News 24, 6:178 (Dec.), 1940.

Leptospira Icterohaemorrhagiae—Seven young men went bathing in a pool near a farm yard. It was probably polluted by rats, for each contracted a leptospirosis. Five were mildly sick, two severely so, and one died. There is a moral here for health educators.

HAVENS, W. P., *et al.* Leptospirosis: a Public Health Hazard. J.A.M.A. 116, 4:289 (Jan. 25), 1941.

Instead of Subsidies—Two-thirds of the population resides in towns where small families predominate. Just what can be done to release new fertility in the urban civilization we are developing had better be studied well. In the meantime there is good reason to do more to guard the health, safety, and training of those who are being ushered into this troubled world.

KISER, C. V. Social Implications of the Under-Developed Family. Milbank Quart. 19, 1:26 (Jan.), 1941.

Infant Exercises—You will be delighted with the photographs of this infant gymnast even though you may not be convinced of the value of organized gymnastics for 4 month old babies. The pediatricians will have to decide how much merit there is to this novel proposal.

KLEIN, M. Gymnastics for Babies. Trained Nurse & Hosp. Rev. 105, 6:446 (Dec.), 1940.

The Child in His Family—Please don't miss this perfect paper even though you have nothing to do with child hygiene or have no young children of your own. It is a sound scientific treatise, but in it you will find no "inhibitions," "libidos," "fixations," or any other trade marks of the newly-arrived scientific writer. Instead you'll find it replete with quotable, homely observations.

SWEET, C., *et al.* The Child-Parent Relationship. J.A.M.A. 116, 1:38 (Jan. 4), 1941.

Who Shall Be Responsible for Mental Health?—Should suicide concern a health officer less than deaths from typhoid or diphtheria? Is a mentally dead person maintained for 40 years at public expense less a community problem than a person dead of smallpox? Who doubts but that preventable mental illness is a frequent cause of juvenile delinquency and the mounting divorce rate? The primary condition for a mental hygiene project is that it shall be a public health program.

VOGEL, V. H. Mental Hygiene in the State Health Department. Pub. Health Rep. 56, 1:1 (Jan. 3), 1941.

ASSOCIATION NEWS

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Lorne W. Bell, M.A., 2328 W. 7th St., Los Angeles, Calif., State Health Supervisor, National Youth Administration

William V. Bessonette, M.D., Old Federal Bldg., Texarkana, Tex., Director, Texarkana-Bowie County Health Unit

Roger M. Burgoyne, M.D., 9 Mt. Vernon St., Winchester, Mass., Health Officer, Winchester Board of Health

Francis B. Elder, M.S.P.H., 6 Golf Court, Teaneck, N. J., Health Officer

Earle C. Gates, M.D., M.P.H., Health Dept., Chesterfield, Va., Health Officer

Irving D. Johnson, M.D., C.P.H., Sutter-Yuba Health Unit, 309 C. Street, Marysville, Calif., Bi-county Health Officer

Fred L. Ogilvie, M.D., Caruthersville, Mo., Pemiscot County Health Officer

Paul Q. Peterson, M.D., Hardinsburg, Ky., Health Officer, Breckinridge & Meade Counties

Roy M. Seideman, M.D., Dr.P.H., 135 North 13th St., Olean, N. Y., Asst. Commissioner of Health, Cattaraugus County Dept. of Health

Mary Steichen, M.D., 341 East 25th St., New York, N. Y., Health Officer-in-training, New York City Dept. of Health

Laboratory Section

Gatlin R. Brandon, M.S., 1724 S. W. Broadway, Portland, Ore., Bacteriologist, State Board of Health

Miriam E. Herdegen, B.S., 1015 Foulkrod St., Philadelphia, Pa., Graduate Student, Bacteriology and Public Health, Univ. of Pa.

E. Harold Hinman, M.D., Tennessee Valley Authority, Wilson Dam, Ala., Senior Biologist, Health and Safety Dept.

Sidney O. Levinson, M.D., 2912 Ellis St., Chicago, Ill., Director, Samuel Deutsch Convalescent Serum Center

Edward R. Mugrage, M.D., 4200 East Ninth Ave., Denver, Colo., Professor and Head, Dept. of Public Health and Laboratory Diagnosis, Univ. of Colorado School of Medicine

Bernard Rosenberg, B.S., 322 Main St., Stamford, Conn., Director, Stamford Medical Laboratory

Vital Statistics Section

Hubert E. Brogden, Ph.D., 1105 W. Edwards St., Springfield, Ill., Senior Statistician, State Dept. of Public Health

Bernard G. Greenberg, B.S., 265 Morris St., Albany, N. Y., Junior Statistician, Bur. of Pneumonia Control, State Dept. of Health

Julius Guttenplan, B.S., 17 Oxford Ave., Buffalo, N. Y., Statistician, District Health Office, State Dept. of Health

Engineering Section

Leslie E. Corkill, B.S., 901–6th Ave., Helena, Mont., Sanitary Inspector, State Board of Health

William P. Hughes, City Hall, Lewiston, Ida., City Engineer and Water Superintendent

William Q. Kehr, B.S. in C.E., 723 Houchin St., Jefferson City, Mo., Asst. Public Health Engineer, State Board of Health

Raymond I. Leland, M.S. in C.E., Manteno State Hospital, Manteno, Ill., Sanitary Engineer

John W. Lemon, B.Sc., 923 Court House, Atlanta, Ga., Asst. Public Health Engineer, Fulton County Health Dept.

Melvin J. Olsen, 4880 8th Ave., Sacramento, Calif., County Sanitary Inspector, Sacramento County Health Dept.

G. M. Ridenour, Ph.D., Box 723, State College, Pa., Assoc. Professor in Sanitary Engineering, Pennsylvania State College.

W. Keith Weeber, M.S., City Hall, East Peoria, Ill., District Sanitary Engineer, State Dept. of Public Health

Industrial Hygiene Section

Charles L. Campbell, Ph.D., State Health Dept., Des Moines, Iowa, Chemical Engineer, Div. of Industrial Hygiene

Edward E. Dart, M.D., 1451 Francisco St., Berkeley, Calif., Medical Officer, Industrial Hygiene Service, State Dept. of Public Health

Lydia G. Giberson, M.D.C.M., One Madison Ave., New York, N. Y., Industrial Psychiatrist, Metropolitan Life Insurance Co.

Oscar A. Glaeser, B.S., P. O. Box 1930, Salt Lake City, Utah, Safety Engineer, U. S. Smelting, Refining and Mining Co.

Harland S. Herrin, B.A., State Board of Health, Helena, Mont., Chemist, Industrial Hygiene Div.

Food and Nutrition Section

J. William Appling, Ph.D., Institute of Paper Chemistry, Appleton, Wis., Research Asst. in Microbiology

Ralph L. France, M.S., Massachusetts State College, Amherst, Mass., Asst. Research Professor of Bacteriology

Byron C. Wagner, B.S., General Electric Co., Bldg. 21-C, Bridgeport, Conn., Engineer, Electric Sink-Cabinet Section

K. G. Weckel, Ph.D., Dept. of Dairy Industry, Univ. of Wisconsin, Madison, Wis., Asst. Professor

Maternal and Child Health Section

Katherine Bain, M.D., U. S. Dept. of Labor, Childrens Bureau, Washington, D. C., Director, Division of Research in Child Development

Horton R. Casparis, M.D., Vanderbilt Hospital, Nashville, Tenn., Consultant, Tennessee State Health Dept.

Ruth A. Zook, B.S., R.N., Court House, Sullivan, Ind., County Public Health Nurse

Public Health Education Section

M. Ruth Butler, M.A., R.N., 887 Juniper N.E., Atlanta, Ga., Secretary, Health Section and Director of Research, The Social Planning Council

Ola G. Hylton, M.A., University Hospital, Ann Arbor, Mich., Asst. Director, Social Services, Univ. of Michigan Hospital

Alfred E. Kessler, M.S., 90-04 161st St., Jamaica, L. I., N. Y., Director of Health Education, Queensboro Tuberculosis and Health Assn.

Casimir F. Park, M.D., Health Dept., City Hall, Milwaukee, Wis., Venereal Disease Control Officer

Public Health Nursing Section

Mary Alton, B.S., Bureau of Public Health Nursing, Michigan Dept. of Health, Lansing, Mich., Regional Supervisor

Myrtle B. Argo, R.N., Dental Bldg., State Univ. of Iowa, Iowa City, Iowa, Supervisor, Dental Health Education, Bureau of Dental Hygiene

Anna S. Brown, R.N., 315 S. Fifth St., Griffin, Ga., Reserve Nurse, West Central Region, State Dept. of Health

Marie C. Buckley, M.S., R.N., 2244 Cleveland Ave., Chicago, Ill., Director of Nurses, Tuberculosis Institute of Chicago and Cook County

Helen M. Lehmann, M.S., 2063 Adelbert Rd., Cleveland, Ohio, Instructor, School of Nursing, Western Reserve Univ.

Mary Jane Mahoney. R.N., 915 Dwyer St., Glendale, Mo., Staff Nurse and Tuberculosis Coördinator, St. Louis County Health Dept.

Jean Greer Roberts, R.N., B.S., Metropolitan Life Insurance Co., 600 Stockton St., San Francisco, Calif., Territorial Supervisor of Nursing

Epidemiology Section

William W. Frye, M.D., Vanderbilt Hospital, Nashville, Tenn., Instructor in Preventive Medicine and Public Health, Vanderbilt University

Keith P. Russell, M.D., Bureau of Health, City Hall, Portland, Ore., Director, Div. of Communicable Diseases

William Wolarsky, M.D., M.S.P.H., 50 West 182nd St., Bronx, N. Y., Student, DeLamar Institute of Public Health, Columbia Univ.

Unaffiliated

Steve Remias, B.S., 536 Walnut St., Ann Arbor, Mich., Student, Div. of Hygiene and Public Health, Univ of Mich.

Joseph H. Smythe, M.D., Ukiah, Calif., Physician, U. S. Indian Service

DECEASED MEMBERS

Charles V. Chapin, M.D., Providence, R. I., Elected Member 1886, Elected Honorary Fellow 1922

George B. Gascoigne, Cleveland, Ohio, Elected Member 1919, Elected Fellow 1922, Elected Life Member 1929

William G. Kirschbaum, New Bedford, Mass., Elected Member 1915, Elected Fellow 1922

W. L. Stevenson, Harrisburg, Pa., Elected Member 1912, Elected Fellow 1922

Antonio Bolduc, M.D., Montreal, Quebec, Canada, Elected Member 1931

Albert B. McCreary, M.D., Jacksonville, Fla., Elected Member 1936

G. L. Ruehle, Silver Spring, Md., Elected Member 1914

George E. Vincent, Ph.D., Greenwich, Conn., Elected Member 1923

EMPLOYMENT SERVICE

The Association Employment Service seeks to bring to the attention of appointing officers the names of qualified public health personnel and to act as a clearinghouse on employment. This is a service of the Association conducted without expense to employer or employee.

From the registry of persons available, selected announcements are published from time to time. Appointing officers may obtain lists of all registrants on request.

Positions Available

The American Public Health Association has been requested to prepare a reservoir of the names of persons eligible for appointment as physicians with experience or special interest in public health work, as industrial hygienists, as engineers, and as laboratory technicians. Persons with training and experience in these fields are invited to register with the Employment Service, American Public Health Association, 1790 Broadway, New York, N. Y.

Physician with public health training to serve as full-time county health officer in rural South Atlantic area. Salary $3,600 to $4,000. Write Box C, Employment Service, A.P.H.A.

Bacteriologist—Alexandria, Va., City Department of Health. Milk, water, serological and general examinations. Salary $1,200 to $1,800 according to training and experience. Apply to W. A. Browne, M.D., Health Officer.

Public Health Nurse—general nurse for Alexandria, Va., City Health Department. Must be a graduate of an accredited hospital, with special training and experience in public health. Salary $1,620 to $1,800 according to qualifications. Apply to W. A. Browne, M.D., Health Officer.

The Arlington County Health Department in Arlington, Va., announces a vacancy for a male bacteriologist technician, salary $1,900 per annum, which may be increased for satisfactory service. Applicants should apply to R. G. Beachley, M.D., Director of Health and Welfare.

Director of County Health Unit, large southern metropolitan area over 200,000, duties to include the direction of complete generalized program. Applicant must have M.D., M.P.H., with satisfactory experience in administration and technical phase of public health work. Salary dependent upon experience and training. Opportunity for advancement assured. Box W, A.P.H.A.

U. S. CIVIL SERVICE COMMISSION

The Commission has announced that applications will be received for positions as Senior Medical Officer ($4,600), Medical Officer ($3,800), and Associate Medical Officer ($3,200), for appointments in the Public Health Service, the Food and Drug Administration, Veteran's Administration, and the Indian Service. Forms for application may be obtained from the U. S. Civil Service Commission, Washington, D. C.

The Commission also announces that applications may be filed for the positions of Public Health Nurse ($2,000) and Graduate Nurse, general staff duty ($1,800) in the Indian Field Service, including Alaska. Forms may be obtained from the U. S. Civil Service Commission, Washington, D. C.

Positions Wanted

ADMINISTRATIVE

A woman physician with rather unusual qualifications in maternal and child health, state and local experience, now completing courses for M.P.H. Especially interested in local health administration. **A-376**

Physician, aged 39, excellent graduate training and experience in public health, specialized in tuberculosis and epidemiology, now employed, will consider position with salary of $4,500 or better. **A-473**

Experienced physician, graduate University of Illinois: M.P.H., Johns Hopkins, 1940; seeks administrative opening suitable to his proven ability. Excellent references. **A-466**

Physician, M.P.H., Harvard; well experienced in city and rural health administration, will consider appointment as district health officer or in city or state health department. **A-418**

Physician, aged 38, M.P.H., Harvard, 1932; experienced as director of county units and in state department of health; will consider administrative position. **A-474**

Physician, graduate University of Iowa, candidate for Dr.P.H. at Harvard, seeks good administrative position. **A-476**

Physician, M.D., Yale; M.S.P.H., Columbia; also short course for health officers, Vanderbilt; good clinical back-

ground; 3 years' public health experience; will consider appointment in child health, epidemiology or public health administration. **A-350**

Experienced physician with A.B. and M.D. from University of Pennsylvania; candidate for M.P.H. from Yale, desires full-time position as health officer. Will consider going abroad with relief expedition to Europe or Asia. **A-477**

Physician, M.D., graduate Vienna, residing New York, specializes in the production of motion pictures on health and welfare problems in collaboration with agencies. Scriptwriting, directing, film editing; also 16 mm. camera work; consultation on general production problems, scripts, budgets. **A-478**

Physician, specialist in maternal and child health. M.D. University of Kansas, M.P.H. Harvard. Excellent background in pediatric residencies, experience in municipal and county health and as Director of maternal and child health in State Health Departments. Desires position as Director of a state program, as pediatrician, or in school or college health program. **A-479**

HEALTH EDUCATION

Young woman, Ph.D., Columbia University; splendid background of experience in health education, will consider position as director of public health education. **H-294**

Well qualified woman physician, M.A. and M.D. from Stanford; with 6 years' experience in nationally known secondary school in health education and medical advisory duties, wishes position in college health work. **H-448**

Health educator, with excellent background of teaching experience in schools; M.S.P.H., University of Michigan; wishes position where skill with educational sound film projection and other recognized technics will be appreciated. **H-405**

Public health nurse; M.A., Columbia, experienced in teaching health education and public health nursing; wishes teaching position in college or university, summer of 1941. **H-472**

LABORATORY

Teaching, executive, or administrative position desired by experienced teacher in bacteriology and public health; Ph.D., Cornell; now professor in grade A medical school. **L-327**

Experienced woman bacteriologist, Ph. D., University of Illinois, 1937, wishes position in teaching or research. Excellent bibliography and references. **L-410**

Experienced bacteriologist, young man of 33, Sc.B., who for several years has been in charge of state laboratory doing public health and diagnostic bacteriology, immunology and serology, will consider opening. **L-427**

SANITARY ENGINEERING

Engineer, aged 38, 3 years' experience as district sanitarian supervisor, state department of health, together with work on plumbing, heating and ventilation, will consider position in the plumbing and heating field or state department of health. Prefers middle western or western states. **E-453**

Public health engineer, B.S., in Sanitary Engineering from Massachusetts Institute of Technology, experienced in Massachusetts, Connecticut, and Kentucky, seeks position as sanitary or public health engineer with health department. **E-380**

Engineer with good training and experience in water treatment, sewage plant operation and in research, wishes position as superintendent. Can go anywhere. **E-422**

Advertisement

Situations Wanted

PUBLIC HEALTH PHYSICIAN—B.S., M.D., degrees state university; M.S.P.H., University of Michigan; several years' successful general practice, including part-time health appointment; 4 years' administrative experience with state department of health; for further information write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago.

PUBLIC HEALTH PHYSICIAN—Young physician is available for public health appointment; B.S., M.D., M.P.H. (cum laude) degrees; several years, rural health officer; 2 years, field epidemiologist; now completing graduate training in tuberculosis work; for further information write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago.

PUBLIC HEALTH NURSE—B.S. degree in Public Health Nursing, Columbia University; graduate of one of country's outstanding hospitals; experience includes several years as infant welfare nurse and 6 years as educational supervisor in outpatient department of large teaching hospital; past several years, instructor of public health nursing, large teaching hospital; for further information write Burneice Larson, Director, Medical Director, Palmolive Building, Chicago.

PUBLIC HEALTH NURSE—Fairly recent graduate of midwestern training school; certified public health nurse; will receive special teacher's certificate upon completion present courses in university medical school; for further information write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago.

BACTERIOLOGIST—A.B., Ph.D., state university; 6 years, university laboratory of animal pathology; 4 years, parasitologist, state department public health; for further information write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago.

Advertisement

Opportunities Available

BACTERIOLOGISTS—(a) Research assistant for survey on prevalence of murine typhus and leptospirosis in Hawaii; basic training and research experience in bacteriology required; training in parasitology desirable; $187, plus traveling expenses to Honolulu. (b) State department of health; $1,900, early increase; Southeast. PH3–1, Medical Bureau (Burneice Larson, Director), Palmolive Building, Chicago.

PUBLIC HEALTH PHYSICIANS—(a) Young physician, well trained in venereal work; municipal health department; Southeast. (b) Obstetrical consultant for State Division of Maternal Hygiene; 3 years' obstetrical training required; advantageous if experienced or trained also in public health work; South. (c) Pediatrician interested in public health work; interesting appointment; state health department. (d) Health officer; Master's degree in public health required; $4,200, plus travel allowance of about $650. (e) Several young physicians trained in public health work for rural health service in Southwest. PH3–2, Medical Bureau (Burneice Larson, Director), Palmolive Building, Chicago.

WANTED—(a) Young physician for 2 year fellowship in student health; stipend for second year $2,250; eastern university. (b) Young unmarried physician; interesting industrial appointment; South America; $300. PH3–3, Medical Bureau (Burneice Larson, Director), Palmolive Building, Chicago.

PUBLIC HEALTH NURSING EXECUTIVES—(a) Public health nursing supervisor; responsibility covers generalized program including school and delivery service; degree desirable, but not essential; $175, plus travel allowance. (b) Educational director and consultant in division maternal and child health; $200, plus travel allowance; West. (c) Public health nurse for important teaching position on faculty of large teaching hospital; public health program in outpatient clinic recently initiated; good organizer required; East. (d) Supervisor outpatient department and central dressing room; large eastern hospital; certificate in public health nursing required. PH3–4, Medical Bureau (Burneice Larson, Director), Palmolive Building, Chicago.

PUBLIC HEALTH NURSES—(a) State public health nursing division; primarily rural work; $1,800, plus $600 traveling expenses; Southwest. (b) Municipal department of health; must be certified public health nurse in Illinois; $125, early increase. (c) School nurse; must be qualified to teach public health nursing; small town; Midwest. PH3–5, Medical Bureau (Burneice Larson, Director), Palmolive Building, Chicago.

NURSE PLACEMENT SERVICE

Anna L. Tittman, R.N., Executive Director

Suite 512, Willoughby Tower, Michigan and Madison Avenues, Chicago, Ill.

Professionally sponsored. Approved Bureau of N.O.P.H.N. Non Profit No registration fee.

ADMINISTRATION—(a) Director P.H.N.; State department of health; West; $2,400. No. 41–0053. (b) Assistant Director P.H.N.; State department of health; Midwest; college degree, certificate in P.H.N.; supervisory and administrative experience; $3,000. No. 40–3185. (c) Director; new visiting nurse service being organized; midwest city of 10,000. No. 41–0214.

EDUCATION—(a) Instructor in P.H.N.; midwestern city health department; initial salary $2,100. No. 40–3278. (b) Assistant professor of P.H.N. and director of program of study; private university; $3,000. No. 40–3128. (c) Educational Director and Assistant to Executive Director; V.N.A.; midwestern; $2,400. No. 40–1504. (d) Director of Health Education Activities; Department for Prevention of disease in large children's hospital; supervise health clubs, assemble health education exhibits, supervise methods of health education as practised by field nurses; university study and experience in health education; salary open. No. 41–0242.

CONSULTATION—(a) Maternity; private urban agency; P.H.N. certificate, generalized supervisory experience, special maternity preparation; $2,100. No. 40–2521. (b) Orthopedic; city health department; western; salary open. No. 40–2703.

SUPERVISORY—(a) Generalized; official; 16 nurses on staff; P.H.N. certificate, 2 years' supervisory experience; southern city; $2,100. No. 41–0156. (b) Generalized; V.N.A.; P.H.N. certificate, college degree, supervised experience; East; $2,100. No. 41–0313. (c) Rural county and District Supervisors; New England; No. 40–2319. Similar positions all sections. Salary range $1,800-$2,100.

ONE NURSE SERVICE—(a) County nurse; western mountain states; P.H.N. certificate, staff experience; Nos. 06338, 40–2820, 09011. (b) County; Southwest; No. 41–0265. Similar positions all sections; salaries vary. (c) Community nurse; private; New England; Nos. 40–2953, 41–0303. (d) Community; private; V.N.A. experience; west coast; $1,800. No. 40–3279.

STAFF—(a) Generalized; V.N.A.; P.H.N. certificate, experience in tuberculosis; mid-Atlantic; $1,500. No. 41–0213. (b) V.N.A.; New England; $1,380. No. 40–2733. (c) V.N.A.; Southwest; initial salary $110. No. 40–2359. (d) Orthopedic; private, urban agencies; open all sections; one year course in Physical Therapy; $130–$150 a month.

NEWS FROM THE FIELD

APPRAISAL FORM FOR LOCAL TUBERCULOSIS ACTIVITIES

A THIRD, revised edition of the *Appraisal Form for local Tuberculosis Activities* has been issued under the authorship of Carl E. Buck, Dr. P.H., Field Director of the American Public Health Association. This report, which is prepared for and printed by the National Tuberculosis Association, 1790 Broadway, New York, has been reviewed and approved by the A.P.H.A. Subcommittee on Appraisal of Local Health Work, W. F. Walker, Dr.P.H., *Chairman*.

A limited supply of single copies is available from the A.P.H.A. office.

SOUTHERN CALIFORNIA PUBLIC HEALTH ASSOCIATION ELECTS OFFICERS

AT its meeting held on February 18, in Los Angeles, Calif., the Southern California Public Health Association elected the following officers, to serve for the current year:

President—Theodore D. Beckwith, Ph.D., Los Angeles
President-elect—Roy O. Gilbert, M.D., East Los Angeles
First Vice-President—A. Victor Nasatir, M.D., Los Angeles
Second Vice-President—Charles W. Arthur, Ph.B., Pasadena
Secretary-Treasurer—Eunice Lamona, R.N., Los Angeles
Assistant Secretary-Treasurer—Floyd P. Wilcox, D.V.M., Los Angeles

"EAT THE RIGHT FOOD"

IT has been announced, by Harriet Elliott, Consumer Commissioner of the National Defense Advisory Commission, Washington, D. C., that, as part of the plans of the Commission for improving nutrition, copies of a folder entitled "Eat the Right Food" are available in quantity from the office of the Commission in the Federal Reserve Building, Washington.

HARVARD–RED CROSS HOSPITAL FOR ENGLAND

THE American Red Cross is sending to England a Unit for the study of communicable diseases in wartime conditions. Dr. John E. Gordon, Professor of Preventive Medicine and Epidemiology at the Harvard Medical School, is now in England completing arrangements with British health authorities for the establishment of a portable hospital of 120 beds which Harvard University and the American Red Cross are sending for a location in southwest England.

Also on the staff are Dr. Paul B. Beeson, Boston, Dr. Gerald F. Houser, Boston, Dr. Dean S. Fleming, epidemiologist, Minneapolis, Dr. William L. Hawley, Boston, Dr. Thomas F. McNair Scott of the University of Pennsylvania, and Dr. Alex J. Steigman, Philadelphia. A staff of fifty Red Cross nurses is being selected for the hospital.

UNIVERSITY OF MINNESOTA TO GRANT MASTER OF PUBLIC HEALTH DEGREE

THE Regents of the University of Minnesota have voted to offer a degree of Master of Public Health in place of the Certificate of Public Health which was previously granted.

The course of study leading to the new degree will be offered through the Medical School and registration will be limited to students who have previously obtained a professional degree. This will include graduate physicians, dentists, veterinarians, engineers, and suitably qualified public health nurses already in possession of a Bachelor's degree. The change will become effective with the current academic year.

Gaylord W. Anderson, M.D., is Professor and Head of the Department of Preventive Medicine and Public Health under which the courses will be offered.

TUBERCULOSIS IN DRAFTEES

THE New York State Department of Health has reported to the Committee on Tuberculosis and Public Health of the State Charities Aid Association of New York regarding the plan set up with the coöperation and approval of U. S. Army authorities to x-ray the chests of men reporting at up-state induction centers under the Selective Service Act. Facilities have been in operation at the stations in Buffalo, Rochester, Syracuse, and Albany, and examination of the first 1,400 men called resulted in the discovery of 19 new cases of tuberculosis. This, in the opinion of Dr. Robert Plunkett, more than justified the time, money, and effort expended in setting up the plan.

TRANSCRIPTION OF RADIO TALK ON EYESIGHT

THE National Society for the Prevention of Blindness is offering, free of charge and express prepaid, an electrical transcription of a 14 minute radio talk on the subject, "Protection of Eyesight and National Defense." The speaker is Mason H. Bigelow, president of the organization.

Requests for the disc should be addressed to: David Resnick, Director of Publicity, National Society for the Prevention of Blindness, 1790 Broadway, New York, N. Y.

NATIONAL STUDENT HEALTH ASSOCIATION MEETING

THE Third Annual Meeting of the National Student Health Association, a recently formed organization of college health workers in Negro institutions in the United States, will be held in New Orleans, La., April 11 and 12, under the auspices of Flint-Goodridge Hospital.

Paul B. Cornely, M.D., is the Executive Director of the Association at Howard University, Washington, D. C.

THE FAMILY PHYSICIAN IN VENEREAL DISEASE CONTROL

THE Bureau of Social Hygiene of the New York City Department of Health, in coöperation with the New York State Department of Health and the U. S. Public Health Service, has announced a new series of Saturday morning meetings for physicians in practice, beginning March 1, for ten consecutive Saturdays. The general theme is "The Rôle of the Family Physician in Venereal Disease Control."

The topics for the first five sessions have been announced as follows: "The Patient with Genital Lesions," "The Patient with Early Syphilis," "The Patient with Visceral Syphilis," The Male Patient with Gonorrhea," "The Female Patient with Gonorrhea."

The sessions begin at 10:30 A.M., at 125 Worth Street, New York, N. Y. No. registration is required.

MICHIGAN APPRAISALS

OF the 83 counties in Michigan, 63 have full-time county or district health departments. All county and district health departments in the state are to be appraised for the year 1940. Dr. B. W. Carey and Miriam Cummings, of the Children's Fund of Michigan, will appraise the 9 units in the Upper Peninsula. Dr. E. V. Thiehoff, Assistant Director of the Bureau of Local Health Services of the Michigan Department of Health, recently started an appraisal of all of the units in the Lower Peninsula except the 7 counties which are supported by the W. K. Kellogg Foundation. In these counties the Kellogg Foundation will conduct their own appraisal.

It is expected that all appraisals will be completed by May, 1941. This is the first time in the history of Michigan that every full-time rural health department will have been appraised in a single year.

NEW ENGLAND HEALTH INSTITUTE

THE Eleventh New England Health Institute, under the sponsorship of the Health Departments of each New England state, will be held in Boston, Mass., April 2–4, with headquarters at the Hotel Statler. The general theme of the Institute is "Public Health in National Defense."

Other collaborating agencies include the U. S. Public Health Service, the Children's Bureau, the U. S. Department of Labor, the New England Tuberculosis Association, Massachusetts Public Health Association and the Massachusetts Central Health Council. The three day Institute is divided into sixteen sections.

Further information may be obtained from the respective State Departments of Health.

RESEARCH GRANTS FOR POLIOMYELITIS STUDIES

THE National Foundation for Infantile Paralysis, 120 Broadway, New York, N. Y., announces that the semi-annual meeting of its Medical Committees will be held May 15, 1941, at which time applications for grants for the study of the cause, prevention, and treatment of infantile paralysis will be considered. Applications for grants must be received at the office of the Foundation on or before March 15.

VERMONT CHILD HEALTH CONFERENCE

A STATE-WIDE meeting on "Health for Children in Vermont," sponsored by the Advisory Committee of the Health Department's Maternal and Child Health Division, was held February 11 in Montpelier, Vt., and drew a record attendance from 82 towns, from every county. Vermont health was the theme of the morning sessions, but at the afternoon and evening sessions speakers considered national health for today and tomorrow.

Mrs. A. M. Gay served as Chairman.

UNIVERSITY OF MICHIGAN NEW SCHOOL OF PUBLIC HEALTH

THE Michigan University Record has announced that under authority from the Board of Regents the teaching of hygiene, public health and preventive medicine has been reorganized and an independent unit at the University has been established.

The Rockefeller Foundation of New York and the W. K. Kellogg Foundation of Battle Creek have each contributed $500,000 for the establishment of the new School of Public Health. The expenditures for site, building, and equipment are not to exceed one-half the total, and the remainder of the grant is available for the expenses of operation over a ten year period. An announcement is to be made later regarding the plan of organization.

HERMANN M. BIGGS LECTURE ON PUBLIC HEALTH

THE Committee on Public Health Relations of the New York Academy of Medicine has announced the annual lecture in memory of Hermann M. Biggs, to be given Thursday evening, April 3, at the Academy of Medicine, 2 East 103rd Street, New York, N. Y. Dr. Clarence A. Mills, Professor of Experimental Medicine, University of Cincinnati College of Medicine, will be the speaker, and his subject will be "The Relation of Climate and Geography to Health." The lecture is open to the public.

CUTTER LECTURE AT HARVARD UNIVERSITY

THE annual Cutter Lecture on Preventive Medicine, to be given at the Harvard Medical School, Boston, Mass., on March 7, will be: "Intracellular Infection and Some of Its Possible Implications," by Dr. Ernest W. Goodpasture, Professor of Pathology of the Vanderbilt University School of Medicine, Nashville, Tenn.

PERSONALS

Central States

GEORGE W. BASSOW, M.D.,† Health Commissioner of Jefferson County, Steubenville, Ohio, announces that the County Health Department is now on a full-time basis.

DR. BERTHA B. BRAINARD, of Jamestown, N. D., was recently appointed in charge of the Student Health Service at Oregon State College, Corvallis.

DR. JAMES C. ELDER, of Millersburg, Ohio, has resigned as Health Officer of Holmes County.

PAUL HANSEN,* of Greeley & Hansen, Engineers, in Chicago, Ill., has been appointed to handle matters of public health for the Illinois Emergency Defense Council. The local council will coördinate matters of defense with the National Defense Council.

ROBERT B. HARKNESS, M.D.,† Director of the Barry County Health Department, Hastings, Mich., has been appointed Assistant Field Director of the W. K. Kellogg Foundation, a newly created position. He will assist MATTHEW R. KINDE, M.D.,† of Battle Creek, Field Director, in administering the educational activities and services in the 7 counties which make up the Foundation's health project. Dr. Harkness will take up his new work in May.

FRANK J. HILL, M.D., M.P.H.,† Director of the Mason-Manistee-Benzie Health Department, Manistee, Mich., has been appointed Director of the Bureau of Preventable Diseases in the State Department of Health.

N. PAUL HUDSON, M.D.,* Professor of Bacteriology and Chairman of the Department of Bacteriology of the College of Medicine, Ohio State University, Columbus, is now in London, supervising the distribution of the influenza vaccine under the auspices of the Rockefeller Foundation.

JOHN L. LAVAN, M.D.,* of Grand Rapids, Mich., who was Health Commissioner of Toledo for 4 years before going to Michigan, has returned to Toledo to become director of a new public health district. Dr. Lavan left Toledo to be Health Officer of Kalamazoo, Mich., in 1932 and went to Grand Rapids as City Health Officer in 1935. In 1939, Dr. Lavan was made Secretary of the newly reorganized Advisory Council to the State Department of Health.

DR. ZODA D. LUMKLEY, of Wood River, Ill., has been named Health Officer of Roxana, to succeed the late DR. CHRISTIAN H. DIEHL.

HERMAN M. SOLOWAY, M.D.,† of Chicago, Ill., has been appointed head of the newly created Division of Social Hygiene in the Illinois State Department of Public Health, the principal function of which will be to control the venereal diseases with especial emphasis on the eradication of syphilis.

DR. HUGH M. SWANEY, of Goodland, Kans., has been named Health Officer of Sherman County.

CHARLES P. TAFT, of Cincinnati, Ohio, has been appointed as Assistant Coördinator of all health, welfare, nutrition, and recreation activities affecting national defense. Mr. Taft is the son of the late President William Howard Taft and a brother of Senator Robert A. Taft.

Eastern States

WALTER H. EDDY, PH.D.,* since 1919 Professor of Physiological Chemistry at Columbia University, New York, N. Y., and since 1927 Director of a Bureau of Foods for *Good Housekeeping* Magazine, has resigned from the Bureau to become head of the Eddy Laboratories, 409 East 47th Street, New York, specializing in consultation and research.

ANDREW O. LAAKSO, M.D., has been

* Fellow A.P.H.A.
† Member A.P.H.A.

appointed Health Officer of Killingly, Conn., succeeding GEORGE S. LAMBERT, M.D.

HERBERT B. LARNER, of New York, N. Y., has been reëlected President of the Board of Health of the Borough of Glen Ridge, N. J., for the current year.

MARTIN L. O'NEILL, M.D., of Jewett City, has been appointed Health Officer of Voluntown, Conn., succeeding JOHN H. MCLAUGHLIN, M.D., of Jewett City.

OSCAR ROGOL, M.D., has been appointed Health Officer of Oxford, Conn.

JOHN S. STANESLOW, M.D., has been appointed Health Officer of Prospect, Conn.

CLARENCE G. THOMPSON, M.D.,† of Norwich, Conn., has been appointed Health Officer of Ledyard.

Southern States

RALPH H. ALLEN, M.D.,† formerly of Ruston, La., has been placed in charge of the health activities in Henry County.

CARROLL T. BOWEN, M.D., of Jacksonville, Fla., Director of Venereal Disease Control for the Duval County Health Unit, has been appointed Director of the Broward County Health Unit, with headquarters in Fort Lauderdale.

JAMES M. CAMPBELL, M.D., of Morton, Miss., has been appointed Health Officer of Marion County.

WILLIAM B. FARRIS, M.D.,† of Tazewell, Tenn., has been appointed Health Officer of Williamson County, to succeed ROSCOE FAULKNER, M.D.

WALTER BROWNLEY FOSTER, M.D.,* head of the Richmond, Va., Department of Public Welfare for 16 years, has been appointed to the staff of the State Department of Health.

JOSEPH HIRSCH,† of Washington, D. C., has resigned his position as Assistant Health Education Specialist with the U. S. Public Health Service, and is now serving as Associate Health Education Specialist with the U. S. Office of Education.

RUTHERFORD O. INGHAM, M.D.,† of Livingston, Ala., formerly Health Officer of Bibb County, has been assigned to a similar position in Limestone County.

DR. ROY L. JOHNSON, of Douglas, Ga., has resigned as Health Commissioner in Coffee County, to enter private practice.

HAROLD M. KELSO, M.D.,† has been named to succeed JOHN C. NEALE, JR., M.D.,† as Director of the Southwest District Health Unit, at Abingdon, Va.

ALLEN W. LANE, M.D., of Lawrenceville, Va., has been appointed Health Officer of Pulaski County, to succeed HAROLD M. KELSO, M.D.†

THOMAS F. MCGOUGH, JR., M.D., recently Assistant Health Officer of Pulaski County, in Pulaski, Va., has been transferred to Northampton County, with headquarters in Eastville, to replace WILLIAM Y. GARRETT, M.D.,† who will take a course at the Johns Hopkins School of Hygiene and Public Health, Baltimore, Md.

JOHN C. NEALE, JR., M.D.,† of Abingdon, Va., has been appointed in charge of the new health district consisting of Isle of Wight, Nansemond, Norfolk, and Princess Anne Counties which has been established in Virginia, with headquarters in Norfolk.

CHARLES W. PEASE, M.D., formerly Health Officer of Hendry County, Fla., was recently transferred to Jacksonville.

WARREN C. RAMER, M.D., of Trenton, Tenn., has been appointed head of the Henderson-Decatur County Health Unit, to succeed JAMES C.

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* Fellow A.P.H.A.
† Member A.P.H.A.

ARMSTRONG, M.D., now of Jefferson City, resigned.

WILLIAM H. SEBRELL, JR., M.D.,* of the National Institute of Health, Washington, D. C., has been appointed Director of the newly established Division of Chemotherapy in the Institute. The new unit will have quarters in Bethesda, Md., in a laboratory building now being equipped, which will also be the headquarters of the Divisions of Chemistry and Zoölogy.

HUGH F. STANTON, M.D., of St. Genevieve, Mo., has been appointed Director of the Central Idaho Health Unit, to succeed MAX B. MCQUEEN, M.D., who has been called to active duty with the U. S. Army.

BERTHA E. STOKES, M.D., of Union Springs, Ala., has been appointed Health Officer of Bullock County, with headquarters in Union Springs; she succeeds DELMER F. PARKER, M.D., who resigned to enter the Indian Service of the U. S. Department of the Interior.

ROBERT W. TODD, M.D., DR.P.H.,† of New Orleans, has been appointed Health Officer of Russell County, Ala., succeeding MARION L. SHADDIX, M.D., of Phenix City, who recently was transferred to Clay County.

ARTHUR P. VANDERGRIFT, JR., M.D., formerly of Jackson, Miss., has been named Director of the DeSoto County Health Unit, succeeding JOHN W. EVANS, JR., M.D., of Hernando; the latter left for postgraduate work at Washington University School of Medicine, St. Louis, Mo.

ABEL WOLMAN, DR.ENG.,* Professor of Sanitary Engineering at Johns Hopkins University, and Chairman of the National Water Resources Committee, has been appointed by Secretary of War Henry L. Stimson to a committee of 7 which will study national defense problems pertaining to air raid shelters, water supply, power, etc.

Western States

CHARLES E. SCHOFF, M.D., of Sacramento, Calif., has resigned as a member of the State Board of Health, due to ill health.

Foreign

CHARLES A. BAILEY, M.D., M.P.H.,† who recently retired from the staff of the International Health Division, Rockefeller Foundation in the Mexico City Office, has become Acting Director of the Yazoo County Health Department, Yazoo City, Miss., replacing HUGH L. MCCALIP, M.D.,† the Director, who is on service with the U. S. Army.

GERTRUDE HODGMAN, recently Dean of the School of Nursing, Peiping Union Medical College Hospital, Peiping, China, has been appointed Director of the Russell Sage College School of Nursing, Saratoga Springs, N. Y. Miss Hodgman, who is a graduate of the Johns Hopkins Hospital School of Nursing, was formerly Educational Secretary of the National Organization of Public Health Nursing and a member of the staff of the Henry Street Visiting Nurse Service, of New York, N. Y.

DEATHS

A. B. MCCREARY, M.D.,† State Health Officer of Florida, died at Jacksonville on January 24, at the age of 45.

WILLIAM WEBBER FORD, M.D., D.P.H., Professor-Emeritus of Bacteriology in Johns Hopkins University, died on February 10, in Baltimore, at the age of 69.

CHARLES VALUE CHAPIN, M.D.,* who retired in 1932 after 48 years as Superintendent of Health of Providence, R. I., died in Providence on January 31.

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* Fellow A.P.H.A.
† Member A.P.H.A.

MARY SWARTZ ROSE, PH.D.,* Professor of Nutrition at Teachers College, Columbia University, New York, N. Y., died in Edgewater, N. J., on February 1.

* Fellow A.P.H.A.
† Member A.P.H.A.

CHARLES WARDELL STILES died in Baltimore, Md., on January 24.

GEORGE EDGAR VINCENT, PH.D.,† former president of the Rockefeller Foundation, died in New York, N. Y., February 1.

CONFERENCES AND DATES

American Academy of Political and Social Science. Philadelphia, Pa. April 4–5.

American Association for Social Security. New York, N. Y. March 28–29.

American Association of Pathologists and Bacteriologists. New York, N. Y. April 10–11.

American College of Physicians—25th Annual Session. Statler Hotel. Boston, Mass. April 21–25.

American Library Association. Annual Meeting. Boston, Mass. June 19–25.

American Medical Association—92nd Annual Meeting. Cleveland, Ohio. June 2–6.

American Public Health Association—70th Annual Meeting. Convention Hall, Atlantic City, N. J. October 14–17.

American Society of Civil Engineers—Spring Meeting. Baltimore, Md. April 23–26.

American Society of Heating and Ventilating Engineers—Summer Meeting. San Francisco, Calif. June 16–20.

American Society of Planning Officials. National Conference on Planning, in coöperation with American Institute of Planners, American Planning and Civic Association, National Economic and Social Planning Association. Philadelphia, Pa. May 11–14.

American Water Works Association—61st Annual Convention. Royal York Hotel, Toronto, Ont., Can. June 22–26.

New York Section—Syracuse, N. Y. March 27–28.

Indiana Section—Indianapolis, Ind. April 24–25.

Illinois Section—Lincoln Douglas Hotel, Quincy, Ill. April 28–30.

Pacific Northwest Section—Olympic Hotel, Seattle, Wash. May 8–10.

Southeast Section—Charleston, S. C. May 12–14.

Ohio Section—Cincinnati, Ohio. May 15–16.

Montana Section—Hotel Florence, Missouli, Mont. May 23–24.

Michigan Section—Grand Rapids, Mich. September 24–26.

Southwest Section—Fort Worth, Tex. October 13–16.

California Section—Fresno, Calif. October 22–25.

Four States Section—Baltimore, Md. November 6–7.

Arizona Sewage & Waterworks Association—16th Annual Meeting. Yuma, Ariz. March 21–23.

Chamber of Commerce of the United States—29th Annual Meeting. Washington, D. C. April 28–May 1.

Child Welfare League of America—Midwest Regional Conference. Chicago, Ill. April 17–19.

Civil Service Assembly—Eastern Regional Meeting. Washington, D. C. Third Week in May. Central Regional Meeting, probably May.

College Health Workers—3rd Annual Meeting. New Orleans, La. April 11–12.

Colorado Public Health Association. La Junta, Colo. May.

Conference of State and Territorial Health Officers of North America. Washington, D. C. Tentative date: Week of April 28.

Florida Public Health Association. Orlando, Fla. December, 1941.

Food Conference—under the auspices of the Institute of Food Technologists. Pittsburgh, Pa. June 16–18.

Group Health Federation of America—Third Annual Convention. Los Angeles, Calif. June.

Heating, Piping & Air Conditioning Contractors National Association. San Francisco, Calif. June 16–20.

Idaho Public Health Association. Lewiston, Ida. October 6–7.

Michigan Public Health Association. Grand Rapids, Mich. November 12–14.

Missouri Public Health Association. St. Louis, Mo. April.

National Association of Housing Officials. Cincinnati, Ohio. April 16–19.

National Foundation for Infantile Paralysis—